

15¢

\$5.50 A YEAR

August 22, 1959

VOL. 75 NO. 8

PAGES 113-128

SCIENCE NEWS LETTER

THE WEEKLY SUMMARY OF CURRENT SCIENCE



Seeds for Space

See Page 118

A SCIENCE SERVICE PUBLICATION

CLEARANCE SALE—SCIENTIFIC BOOKS—

UP TO 60%
DISCOUNT

295. THE NEW PSYCHOLOGY OF LEADERSHIP. By D. A. & E. C. Laird. Illustrated. A wealth of down-to-earth guidance, based on scientific research, which shows how executives, personal directors, foremen and supervisors can put this information to best use, with numerous case histories. Examples. Pub. at \$4.00. **2.26**

413. 1001 WAYS TO REPAIR AND IMPROVE YOUR HOME. By George Daniels. Illustrated with hundreds of photographs & diagrams. New complete guide to every home repair and improvement, giving clear step-by-step instructions, showing the best, quickest and cheapest way to do just about anything. Add beauty and value to the home, inside and out. Pub. at \$4.95. **Only 3.20**

138. TREASURY OF AMERICAN GARDENS. By James F. Smith & F. Rockwell. With 250 illustrations, 100 in color. In this handsome, lavish volume, 10 1/2 x 13, two distinguished writers join forces with the leading photographers to present in words and pictures, the great gardens of America from the Atlantic Seaboard to Hawaii. A few of the gardens are public but the large majority are private ones and seldom seen. The illustrations are magnificent and there is a wealth of ideas for landscaping and planting, with special consideration of Gardens Under Glass—Terraces and Patios, Rock Gardens, Water Landscapes—Specialty Plantings—Wildflowers. Pub. at \$12.50. **Only 9.93**

330. ANIMALS ALL. Ed. by Peter Skelton. Illustrated with 151 photographs. Albert Brown. Excellent selection of fifteen stories in which the animals themselves are heroes—written by outstanding authors and containing much interesting lore. Pub. at \$3.75. **3.62**

257. TINKERS AND GENIUS: Yankee Inventors. By Edmund Fuller. That amazing era of the 19th century when Yankee inventiveness was at its peak, sawning the tools, machines and techniques which changed the face of America—with fascinating portraits of the strange characters and wonderful anecdotes. Pub. at \$4.50. **Only 2.26**

258. JOHN BARTRAM AND THE EARLY NATURALISTS: New World. Illustrated. Full of the wonder and excitement of the unexplored wilderness of America of the 18th century, and the group of botanists whose attitudes changed the country's thinking about the preservation of the world of nature. Pub. at \$4.50. **Only 2.26**

H111. LIFE UNDER THE MICROSCOPE—With 400 Captions, Photographs, & Full-Page Color Plates. By G. Jirovec, et al. A beautiful volume devoted to the microscope and its contribution to man's knowledge and control of nature. Each page of this informative and entertaining book contains superb photographs—many full-page size—illustrating the infinite variety of forms found in nature's works of art, ranging from the familiar six-pointed snowflake to the striking shapes of magnified inorganic substances as well as algae, fungi, molds, lichens, mosses, ferns, sponges, corals, insects, even the structure of individual organs in the higher animals and man. With brief descriptions of binocular, fluorescent and electron microscopes, pioneers in microscopy, etc. 9 1/2 x 12 1/2, imported. **Special 3.95**

329. ANIMAL LEGENDS. By Maurice Burton. Illustrated with 20 drawings. The well-known authority on animal behavior examines some long-established animal legends—all of incidents and observations that are unusual and extraordinary, this book is one of the most original and fascinating books on the subject. Pub. at \$4.95. **Only 3.20**

250. THESE WERE THE WOMEN: 1776-1860. By Mary Ormsbee Whitton. Brilliant thumbnail sketches of women who played a decisive role in the development of American civilization from Revolutionary days down to the Civil War—a fascinating record with lively quotations from contemporary books, diaries and old letters. Pub. at \$3.95. **Only 2.20**

323. THE STORY OF THE GULF STREAM: River in the Sea. By Hans Leip. Illustrated with 23 photographs, maps and drawings. A rich and enormous range of information anecdote and legend relating to the Gulf Stream and the achievements and histories of those countries in its path from the early Mexican civilization through the 16th century European colonizations and explorations up to the present. Pub. at \$3.75. **Only 1.62**

8397. ANOMALIES AND CURIOSITIES OF MEDICINE. By George M. Gould, M.D., and Walter L. Pyle, M.D. An encyclopedic collection of rare and extraordinary cases, and of the most striking instances of abnormality in all branches of medicine and surgery, derived from an exhaustive research of medical literature from its origin to the present. Abstracted, annotated and indexed. 12 half-tone plates and 295 illustrations in the text. 982 pp. Pub. at \$12.50. **Only 5.98**

263. BY SAIL TO THE SOUTH SEAS: Cloud of Islands. By W. I. B. Creelock. With 36 illustrations and maps. Enthralling record of a voyage into strange, exotic seas in a 70-foot ketch—from the Panama Canal to the Pacific, to battle the elements, the doldrums to Galapagos Islands, through 3,000 miles of ocean to the South Sea and eventually to Tahiti—fascinating adventure, all told with charming humorous vivacity. Pub. at \$4.00. **Only 2.26**

B1035. WHERE WINTER NEVER COMES. By Marston Bates. The author of "The Nature of Natural History" tells about the beauty of life in the tropics as well as the possible difficulties. He describes plants, climate, customs, food and social background. 35 illustrations. Pub. at \$3.50. **Only 2.95**

B1066. SCIENCE AND PHILOSOPHY. By Alfred North Whitehead. The 20th century has produced few men whose achievements in philosophy can surpass those of Alfred North Whitehead. Here, sparkling with wisdom and humor, is a cross-section of a distinguished career; articles on immortality, the dangers of the past, science and the future, etc. Pub. at \$4.75. **Only 3.20**

H213. VESALIUS—The Anatomy Illustrated. Ed. by J. B. Saward and Charles B. O'Malley. A beautiful modern edition of one of the most remarkable works in the whole history of science, art and printing. Included are 96 full-page facsimiles of Vesalius' powerful and dramatic woodcuts of the human figure, with annotations, a discussion of the plates and a biographical sketch of the great 16th century physician-artist. "A great classic, a scholarly work and a beautiful one."—N. Times. **Sale 8.98**

H109. CHEMISTRY MADE EASY. By C. T. Snell and F. D. Snell. This extremely well-written and thorough self-teaching course covers the three branches of chemistry—general, inorganic and organic. The basic information is clearly presented and copiously illustrated, with practical, everyday experiments and tables for convenient reference. Originally published in 3 volumes at \$20.00. . . . now completely revised and rewritten in one volume. List price \$10.00. **Special pre-publication offer 7.95**

H31. HORTICULTURE IN AMERICA TO 1860—A History. By U. P. Hedrick. Story of the development of fruits, flowers and vegetables in each section of the U. S. 8. Includes descriptions, herb culture, orchards and truck farming, plant breeding, fashions in foods and flowers; the work of Washington and Jefferson, the Quakers, French, Dutch, Swedes, etc. Illus. Pub. at \$7.50. **Sale 5.20**

H234. ENGINEERING INSPECTION MANUAL. By H. A. Roy. Every important method described and illustrated—how to use inspection tools and gauges, make setups, check castings, etc. . . . time-saving tables, hints, and short cuts. Pub. at \$5.75. **Special 4.50**

4563. THE "THINK CLEARLY!" SERIES. A 10-volume home-study course in logic and clear thinking showing how you can utilize these vital tools in everyday life. 10 softbound books cover scientific and efficient thinking, keys to rapid learning, etc. Nearly 300 pp. Illus. **The entire set, Special \$3.00**

H68. MATHEMATICAL TABLES AND FORMULAE. By F. J. Cunn. The standard mathematical symbols, interest tables, weights and measures, log and trigonometric conversion tables, laws of physics, formulae in algebra and calculus, etc. Essential for the home reference shelf, as well as for engineers, craftsmen, students, etc. Pub. at \$2.75. **Sale 2.41**

7129. THE MACMILLAN WILD FLOWER BOOK. By Clarence J. Nylander. A valuable guide to wild flowers, here is an art treasure to cherish through the years. It contains an outstanding collection of glorious watercolor reproductions of 426 wild flowers with concise commentary on each one. Pub. at \$15.00. **Only 8.95**

6133. UNDERSTANDING SURGERY. Ed. and compiled by Robert E. Rothberg, M.D. This book explains to the lay reader clearly and in nontechnical terms the nature of many different kinds of surgical operations. It takes surgery out of the unknown and gives to the reader all the information he needs to know before undergoing surgery. Over 100 illustrations. Pub. at \$4.95. **Only 4.50**

F87. FIELD BOOK OF AMERICAN TREES AND SHRUBS. By F. Schuyler Mathias. A ready means of identifying the native trees and shrubs throughout the United States. This is an ideal book to enhance your nature enjoyment. 554 pages. 16 color plates. 130 line drawings. 50 crayon drawings. **3.95**

8239. NEW WAYS TO BETTER SIGHT. By Dr. Harris Gruman. Everything you need to know about your eyesight, its improvement and retention. Latest information on improving sight after farsightedness, nearsightedness, eye exercises, etc. Illus. Pub. at \$3.00. **Only 1.98**

F817. FIELD BOOK OF PONDS AND STREAMS. By Ann Haven Morgan. A complete guide to the plants and animals that live in fresh water, their appearance, life and habits. Suggestions are made on the finding and collecting of water animals, and their care in aquaria. 64 pages. 23 color plates. 314 line cuts. 42 photographs. **5.00**

F88. FOREST TREES OF THE PACIFIC COAST. By Willard Ayres Elliot. A brief account of the characters, distribution and habitat of the trees native to Alaska, British Columbia, Washington, Oregon, Idaho, northern California, and eastward to the Western Slopes of the Rockies. 565 pages. 248 photographs. 13 line cuts, large 12mo. **7.50**

G1. JUNGLE MISSION. By Rene Riessen. Illustrated with 13 photographs and 2 maps. Strange adventures of a young French officer among a primitive tribe in Indochina. Pub. at \$3.00. **1.62**

G2. FROM COPENHAGEN TO OKANOGAN. By N. E. Fries. 42 illustrations. The story of the pioneer fortitude in the Okanogan Valley in Washington—real Americans along the banks of the mighty Columbia. Pub. at \$5.00. **1.62**

G3. IN ALASKAN WATERS. By Alfred Wafer. With 27 illustrations. The life of the deep-sea fishermen in the Puget Sound, and the glacier-rimmed inlets of Alaska. Pub. at \$3.00. **1.62**

G4. NATURE WHEEL. Sponsored by the National Audubon Society, this is the new and interesting guide for children—24 species of birds in color, arranged on a cardboard with special pointers and answers. Pub. at \$1.00. **59¢**

6137. LAND BIRDS OF AMERICA. This superlatively beautiful book contains 221 full-color photographs and 50 in black-and-white by 30 of America's top photographers. Text by Robert Currier, Norman Murphy and Dean Amador. 9 1/2 x 12 1/2. Pub. at \$12.50. **Only 5.95**

B1037. NUCLEAR PHYSICS. By W. Heisenberg. One of the outstanding physicists of our time tells the story of his views about the most astounding development of the atomic bomb. Discusses molecules and atoms. Bohr's Theory, the periodic system and the extra Nuclear structure of atoms and then gets to the main subject of his work, radio activity, binding energy of Nuclei, Nuclear structure, transmutations, etc. With 18 halftones and 34 line illustrations. Pub. at \$4.75. **Only 3.75**

5331. PREHISTORIC ANIMALS. By Dr. J. Augusta and Z. Burian. The great and fearsome beasts of prey, extinct flowers, strange sea creatures—recognizable ancestors of many of today's animals—birds and fish—from earliest plant life to the emergence of Man—captured in 55 full-color paintings. The extensive text brilliantly blends the artist's skill with up-to-date scientific knowledge. This unique, absorbing, imported book served as the basis for a film that won the Grand Prix at the Venice Film Festival. 10 1/2 x 13 1/2. Pub. at \$12.50. **Only 7.95**

H184. THE MACHINIST DICTIONARY. By F. H. Colvin. Thousands of terms, definitions, charts, tables of standards, and instructions—from ABC Screw Threads to Zircosil—plus hundreds of professional prints, drawings, diagrams, and how-to photographs. Essential for the apprentice, the perfect reference for the busy master. \$7.95. **Sale 4.62**

H187. POPULAR MATHEMATICS. By Denning Miller. Beginning with primitive man and his ability to count off his flocks, the eight mathematical branches from arithmetic to calculus are explained from an arithmetical, as well as practical understanding and application. This intriguing blend of mathematics can be instructive and historic, from ground, from Plato to Einstein. . . . is a rare treat for all who are involved with mathematics by vocation or avocation, the perfect Math book for all. 616 pages. Illustrated. Pub. at \$5.00. **Now 6.79**

H179. Rain, Sun, Storm—ON THE WINGS OF THE WIND. By D. C. Holmes and M. Pitkin. The fascinating story of temperature, pressure, humidity, air masses and other weather phenomena and how they have influenced history and civilization from the days of sun worship to radar forecasting. 25 photos. Pub. at \$3.75. **Sale 2.46**

F812. FIELD BOOK OF COMMON ROCKS AND MINERALS. By Frederick S. Leonard. For identifying the rocks and minerals of the United States and interpreting their origins and meanings. 370 pages. 50 color illustrations. 50 line cuts. 25 photographs. **2.95**

5536. LOVE IN THE SOUTH SEAS. By Bengt Danielson, anthropologist on the Ken-Tiki voyage. A complete, accurate, frankly written account of the family and sex life of the Polynesians. Deals with sex instruction, marriage customs, sexual freedom and prohibitions, attitude toward nudity, abortion and virginity, and the basic concepts of a people to whom the sexual act is as natural as eating and drinking. Photos. Pub. at \$4.00. **Only 3.25**

405. HOW AND WHEN TO CHANGE YOUR JOB SUCCESSFULLY. By Walter Loven. The internationally famous placement expert answers every question as to whether the job-holder is to stay on, hoping for promotion, or to move on to greener pastures—comprehensive, practical, specific and far-reaching volume. Pub. at \$2.95. **1.62**

166. ALBERT EINSTEIN'S IDEAS AND OPINIONS. Here is the most definitive collection of Einstein's popular writings gathered under his own supervision, such subjects as relativity, atomic war or peace, religion, science, human rights, economics, government, etc. Pub. at \$5.00. **Only 4.25**

Please send me the titles I have numbered below. I have added 35¢ for postage and handling (on orders under \$5.00), and 3% NYC Sales Tax (for residents of NYC). Amounts enclosed.

PRINT NAME AND ADDRESS CLEARLY. THIS IS YOUR SHIPPING LABEL

OLIVER GARFIELD CO., INC.

Dept. SL-89-D

108 E. 16 St., N. Y. 3, N. Y.

NAME

ADDRESS

CITY

STATE

ENGINEERING

Spot Underground A-Test

Detection of underground nuclear bomb test explosions has been improved with refinements in two seismic techniques. Long distance detection may be possible.

IMPROVEMENT of two seismic techniques may enable scientists to detect underground nuclear tests at considerable distances.

This prediction came as a result of several years of "intensive seismological research" by the U. S. Coast and Geodetic Survey for the Atomic Energy Commission.

Dr. Dean S. Carder, chief seismologist of the Survey, said the major difficulty is to distinguish between sub-surface nuclear explosions and comparable natural earthquakes, that occur by the thousands annually.

The two techniques described by Dr. Carder are 1. the use of arrays of electrically connected seismic detectors, at least 100 in each array, and 2. the placement of detectors in deep holes.

Detection of nuclear tests is based on the differences in ground movements produced by explosions and natural earthquakes. Caused by scissors-like motion along a natural geological fault, earthquake movements are upward in certain areas and downward

in others. Explosions produce only upward movements of the ground.

The seismic array was developed to filter out interfering "noises" in order to distinguish between the earthquake and explosion characteristics. Much of the interference is of the same frequencies as the seismic signals that need to be recorded.

The array detectors must be arranged in an extremely precise way, Dr. Carder said. Data from the detectors are fed into a central station where an electronic device sorts out the background "noise." A precise array, he said, should be able to detect the first weak signal of an earthquake or explosion even if it is weaker than the interference.

By placing seismic detectors in deep holes, down to 5,000 feet, the "noise" could be reduced ten-fold. This is possible, he explained, because the "noise" is confined mostly to the surface.

Dr. Carder pointed out that the HARD-TACK II and PLUM BOB nuclear test series, which included underground explosions, led to some confusion concerning

seismic detection. Previously, it was thought that the first recorded movement produced by explosions would be upward. The results showed, however, that some motions were up, some down, and some unclear.

Dr. Carder said Columbia University and the California Institute of Technology are conducting studies on the strengths of waves at various depths. This may aid in discrimination on the origin of the waves. The scientists hope to prove that earthquake waves are strong at depths and at the surface, while explosion waves are weaker near the surface. Studies will also be made to determine how the frequencies of the waves may differ.

Science News Letter, August 22, 1959

PSYCHOLOGY

Skin Response Identifies Emotionality in Prejudice

YOUR SKIN betrays your prejudice. Emotion plays an important role in a person's likes and dislikes and can be measured physically, Dr. Joseph B. Cooper of San Jose College (Calif.) reports.

Dr. Cooper has shown this emotional response when a prejudice is challenged in what he describes as the first physiological measurement of the relation between emotion and prejudice. He reports his findings in *Science* (Aug. 7).

Emotion involves many physiological changes that mobilize the body to meet emergency, the psychologist explains. He measured one of these changes while the subject listened to statements that either "panned" or praised groups he had already evaluated as "liked intensely" or "disliked intensely." The galvanic skin response, in which electrical changes are recorded by electrodes attached to a person's palms, was the technique used.

Analysis of the responses of the college students tested showed a further distinction between positive and negative prejudices. The students displayed more emotion when complimentary statements were made about disliked groups than with complimentary statements about liked groups. The responses were compared in both cases with complimentary statements about groups to which the student expressed "neutrality."

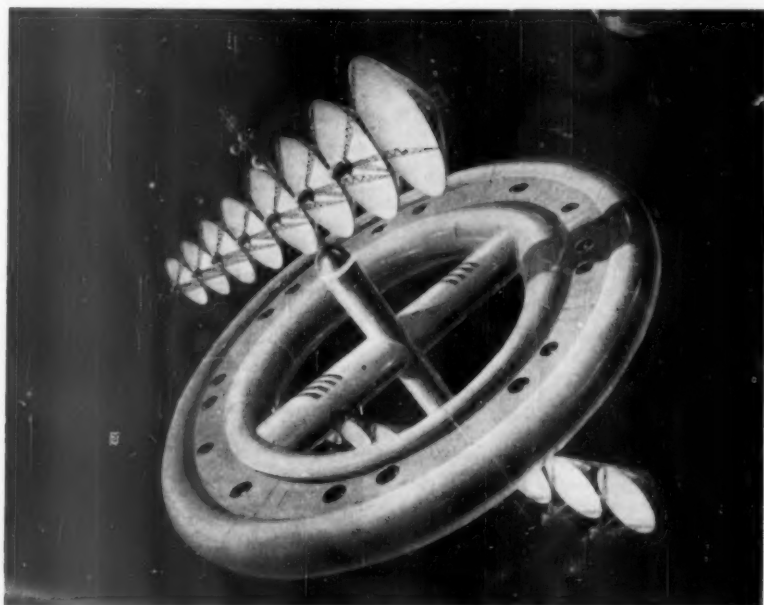
In another test the procedure of having the student rank ethnic and national groups and then measuring his emotional response was reversed. First the student listened while complimentary statements were made about nine of these groups. His galvanic skin response was measured. On the basis of the student's physical reactions, the researchers determined which group was most liked and which least liked.

Later, the student ranked the nine groups in a paired comparison test; he circled the name of the one group which he preferred in each pair. Each group name, such as Austrians, Jews, Mexicans and Japanese, appeared once paired with every other.

As predicted, Dr. Cooper concludes, there was very close agreement between a student's galvanic skin response and his rating of the various groups.

His skin actually did reflect his prejudices.

Science News Letter, August 22, 1959



SPACE TELEVISION—A network of three or four manned space stations, such as that shown in the photograph, fixed at points approximately 22,000 miles above the earth's equator, may link major cities with live television and microwave radio communications. As described by engineers at the Radio Corporation of America's Astro-Electronic Products Division, Princeton, N. J., the vehicle would be doughnut shaped. Each satellite would carry several narrow-beam microwave antennas, each one aimed at a specific city or area. The satellites could also serve as "orbital post offices."

PEDIATRICS

Infant Acquires Addiction

A CHILD can become a dope addict before he is born if his mother takes narcotics during her pregnancy.

The problem of addiction in the newborn infant may multiply in the near future due to the increasing trend in drug addiction, Drs. Ralph W. Cobrinik, R. Thornton Hood Jr., and Emanuel Chusid, all of the New York Medical College, explain.

The three investigators studied 22 newborn infants whose mothers were addicts plus a review of the literature of the narcotics problem in the newborn since 1875.

Their conclusions were that:

1. Infants exhibit narcotic addiction by presenting difficulty in feeding, vomiting and diarrhea, yawning, sneezing and fever. The severity of these symptoms appeared to depend upon how much of the narcotic was taken by the mother and her method of taking it.

2. Paragoric, phenobarbital, chlorpromazine, calcium and reserpine were used in treating the infants. The most effective results were obtained with paragoric and chlorpromazine in diminishing amounts.

Too rapid or too sudden a reduction of the dose only brought the infant back to its condition at birth.

3. A review of the literature revealed that one mother who took a large daily dose of morphine, 600 mgs, delivered a normal infant. One of the 22 mothers studied took less but had an addicted infant at birth. Therefore, each mother's ability to addict her unborn child is an individual case.

4. Among those infants addicted through their mothers, 37 received no therapy. Of these, 33 died, the doctors report in their review of available literature.

Many doctors appear to agree that if the addicted pregnant woman is not seen until her seventh month of pregnancy, there should be no attempt to withdraw her from the drug until two months after the birth of the baby. Since they have obtained excellent results with proper care of the newborn, there is little reason to jeopardize the pregnancy by treating the mother severely, the researchers report in *Pediatrics* (Aug.).

Science News Letter, August 22, 1959

MEDICINE

Test Synthetic Narcotic

THE LONG ARM of the Narcotics Bureau is encircling a synthetic drug even before it hits the market.

Whether or not the drug proves to be useful as a pain killer is incidental to narcotics investigators. They want to be sure that it is not mass produced for indiscriminate distribution to the public.

The drug is 3-Hydroxy-N-phenylmorphinan. It has been produced to kill pain. It may do the job. It may not.

Clinical studies are being conducted by the U. S. Public Health Service Hospital in Lexington, Ky. Previous studies revealed to scientists that the drug, supplied by Hoffmann-La Roche, Inc., Nutley, N. J., can cause

addiction. Now they want to determine if it can kill pain.

More than 35 such synthetic drugs have been produced over the past few years. Only a few have made the grade as pain killers because they must also lack strong addicting properties. The ideal pain killer would be effective, yet have no poisonous side effects and no addicting properties.

Those that have been accepted for medical purposes and are available only on prescription include Dromoran, methadone, Demerol, and Nisentil. All are under the Government's narcotics regulations because they are capable of causing addiction when used over a period of time.

Science News Letter, August 22, 1959

GENETICS

Find Genetic Link

"NAKED" MICE have provided the scientific world with a mysterious link in the heredity chain.

These mice that lose all of their hair by the time they reach the age of seven months are a special offshoot of normal, hairy mice. The "naked" mice comprise a separate mutant group.

Drs. W. F. Hollander and John W. Gowen of Iowa State College, Ames, report in the *Proceedings of the Society for Experimental Biology and Medicine* (July).

The female mice belonging to the group that loses its hair appear to have some genetic antagonism toward their own babies. An unusual number of the babies of these

mice die within two weeks after birth, the researchers explain.

When one of these "naked" females is mated with a normal male, genetic law in this instance states that half of the offspring will be hairy, the other half will be hairless within seven months. But such matings produced twice as many mature hairless mice as normal. This was found to be due to a high mortality rate among the newborn hairy babies.

These deaths are due mainly to the size of the litter and milk feeding problems, and growth disturbances, all of which were more significant among the naked mothers' litters.

Yet when the situation was reversed, and

the "naked" male was mated with a normal, hairy female, the scientists received the expected ratio of one normal baby for each eventually hairless one. This means that the mortality rate for the "naked" female litters was three times as high as the mortality rate for litters of normal females.

Babies that died were the "runts" of the litters. Many of these babies broke one or more legs. The offspring of naked mothers exhibited fragile bones, inadequate lung inflation and inferior growth, the scientists report.

It is conceivable that some such antagonistic gene property is operating in monogamism, they suggest.

Science News Letter, August 22, 1959

SCIENCE NEWS LETTER

VOL. 76 AUGUST 22, 1959 NO. 8

Edited by WATSON DAVIS

The Weekly Summary of Current Science, published every Saturday by SCIENCE SERVICE, Inc., 1719 N St., N.W., Washington 6, D. C., NORTH 7-2255. Cable Address: SCIENCE SVC.

Subscription rates: 1 yr., \$3.50; 2 yrs., \$10.00; 3 yrs., \$14.50; ten or more copies in one package to one address, 7½ cents per copy per week; single copy, 15 cents; more than six months old, 25 cents. No charge for foreign postage.

Change of address: Three weeks notice is required. When ordering a change please state exactly how magazine is now addressed. Your new address should include postal zone number if you have one.

Copyright © 1959 by Science Service, Inc. Reproduction of any portion of SCIENCE NEWS LETTER is strictly prohibited. Newspapers, magazines and other publications are invited to avail themselves of the numerous syndicated services issued by Science Service. Science Service also publishes CHEMISTRY (eight times a year) and THINGS of Science (monthly).

Printed in U.S.A. Second class postage paid at Washington, D. C. Established as mimeograph form March 13, 1922. Title registered as trademark, U. S. and Canadian Patent Offices. Indexed in Reader's Guide to Periodical Literature, Abridged Guide, and the Engineering Index. Member Audit Bureau of Circulation.



SCIENCE SERVICE

The Institution for the Popularization of Science organized 1921 as a non-profit corporation.

Board of Trustees—Nominated by the American Association for the Advancement of Science: William W. Rubey, U. S. Geological Survey; Wallace R. Brode, National Bureau of Standards; Douglas Whitaker, Rockefeller Institute for Medical Research. Nominated by the National Academy of Sciences: Harlow Shapley, Harvard College Observatory; Philip Bard, Johns Hopkins University; Henry Allen Moe, John Simon Guggenheim Memorial Foundation. Nominated by the National Research Council: Leonard Carmichael, Smithsonian Institution; John E. Dunning, Columbia University; Benjamin H. Waller, Johns Hopkins University. Nominated by the Journalistic Profession: Michael J. Opat, Providence Journal-Bulletin; O. W. Riegel, Washington and Lee University; Lee Hills, Detroit Free Press. Nominated by the Scripps Estate: Edward J. Meeman, Memphis Press-Scimitar; Frank Ford, Washington, D. C.; Charles E. Scripps, Cincinnati, Ohio.

Officers—President: Leonard Carmichael; Vice President and Chairman of Executive Committee: Charles E. Scripps; Treasurer: Wallace R. Brode; Secretary: Watson Davis.

Staff—Director: Watson Davis. Writers: Helen Buehli, Ann Ewing, Richard Little, Allen Long, Jane Marys, Elizabeth Mitchell, Ralph Segman, Howard Simons, Benita Tall, Marjorie Van de Water. Science Youth Division: Joseph H. Kraus, Dorothy Schriver, Shirley Moore. Photography: Fremont Davis. Production: Priscilla Howe, Marcia Nelson. Syndicate Sales: Mollie Jenkins. Interlingua Division in New York: Alexander Gode, 80 E. 11th St., Gramercy 3-5410. Advertising Manager: Fred A. Moulton, MEtropolitan 8-2562.

ASTRONAUTICS

Plan Guide for Astronauts

Invisible magnetic fields may provide astronauts with navigation system within the solar system. A device that will measure weak and strong magnetic fields is being developed.

FUTURE ASTRONAUTS may use invisible magnetic fields in space for emergency navigation within the solar system.

There is a "distinct possibility" that magnetic fields, like the one that makes compass needles point north on earth, could supplement astronomical and inertial navigation systems.

But before scientists can know the extent to which a magnetic navigation system could be of value, they first must determine what magnetic conditions exist in space.

With this goal in mind, the National Aeronautics and Space Administration has contracted for development of a "rubidium vapor magnetometer" by Varian Associates, Palo Alto, Calif. The sensitive magnetometer, which can measure weak as well as strong magnetic fields, ultimately will be put aboard a space-going rocket. It will radio back to earth the magnetic field conditions it encounters on the flight, especially around the moon. This space experiment probably will not be conducted this year.

Results of the flight may tend to confirm or disprove a current theory that solar flares, associated with sunspots, fling out plasma

which in some parts of the solar system trap magnetic fields. In other parts of the solar system, especially close to the earth, the plasma tends to blow away magnetic fields.

The rubidium vapor magnetometer, which recently was improved in sensitivity to weak fields by T. L. Skillman of NASA and Dr. Peter L. Bender of the National Bureau of Standards, is to be carefully checked at the Fredericksburg (Va.) Magnetic Observatory and Laboratory.

The Observatory has a room containing electric coils 18 feet in diameter. They can simulate magnetic conditions anywhere on earth. By adjusting the controls carefully, even the earth's magnetic field can be cancelled out, yielding a small area having effectively no magnetic field.

New controls are being installed, financed by NASA, to compensate automatically for changes in the earth's magnetic field, especially during magnetic storms. These controls will help scientists achieve a constant field intensity during the instrument's check-out period.

Science News Letter, August 22, 1959



SPACE TEST—Miniaturized instruments developed by the Boeing Airplane Company are shown on a life-size model. The 15-pound metabolism measuring instrument held by Dr. Irving Streimer was trimmed down from the normal 100-pound device.

ENGINEERING

AEC to Exploit Thorium In Hunt for Atomic Power

IN ITS SEARCH for sources of nuclear power the Atomic Energy Commission has begun a long range program to exploit the energy of thorium.

The Oak Ridge Operations Office of the AEC will develop thermal breeder reactors to change thorium into fissionable uranium-233, the AEC has announced. Thorium is inserted into the reactor fueled with uranium-233 or uranium-235. The uranium sustains a nuclear chain reaction in which the reacting neutrons are slowed down to thermal (heat) energies.

The slow neutrons are captured by the thorium to form some new uranium-233, fissionable material which may be used to replace the old uranium in the reactor. The reactors are called breeder reactors because they produce more fissionable material than they consume.

Thorium is more abundant in the earth than natural uranium but reserves exploitable for commercial use are less extensive. Thorium, a dark gray metal, is found in monazite sand in North and South Carolina and in Brazil and India.

The breeder reactor will convert thorium to fissionable material at a doubling time of not more than 25 years. Enough fissionable material will be produced in 25 years to start a new breeder reactor.

In the initial phases, the thorium breeder reactor program will be a basic research project. It will also evaluate reactor technology to determine the best-suited thermal breeder reactor.

Science News Letter, August 22, 1959

BIOLOGY

Plants Yield Serum

A report from Yugoslavia describes what may be the first reaction of a plant to human antigens, a response that appears to be the reverse of known plant-animal reactions.

PLANTS GIVEN human red blood cells have reacted to the injection "like people," producing serum containing antibodies.

This is believed to be the first reported reaction of a plant to a human antigen.

A Yugoslav medical researcher, Aleksandar Mitrovic, reports having successfully obtained serum artificially from living plants. According to a brief abstract which appears in *Scientific Information Report* (July 17), the serum will be sent for testing and study to scientists in Europe and America.

Red blood cells of group "O" were injected into the "trunks of ten plants," the translated report reads. Some plants died, others lost their leaves. After one month, sap from the living plants was extracted and seven and one-half liters of serum were obtained.

Hundreds of samples of human blood were then tested with the serum. "A very sensitive method of testing" showed that the plant extract "behaves in the same way as reagent obtained from humans," the Yugoslav scientist reports.

The Central Intelligence Agency translates these unevaluated research reports from Yugoslavia and Iron Curtain countries which are then distributed as semi-monthly publications by the U. S. Department of Commerce.

If true, this report will have important scientific significance, Dr. Geoffrey Edsall of Walter Reed Army Medical Center told SCIENCE SERVICE.

For some time now, Dr. Edsall pointed out, scientists have shown that plant juices will react with blood serum. However, the Yugoslav research appears to be a reverse of this, Dr. Edsall explained.

"To the best of my knowledge," another Walter Reed researcher said, "this is the first reported reaction of a plant to a human antigen." A practical application might be its use as typing serums for testing human blood. For example, Col. Joseph H. Akeroyd said, it might provide a relatively cheap source of Rh serum. All that used now is of human origin.

Science News Letter, August 22, 1959

PUBLIC HEALTH

Avoid "Routine" X-Ray

Hazards such as a malformed fetus, genetic damage and mutation, or leukemia face the pregnant woman who is subjected to too many X-rays.

X-RAYS should definitely be avoided during the early months of pregnancy, four experts warned.

This means that they should be avoided whenever possible in at least the first three months, and there should be no such thing as "routine" X-rays.

Doctors should also pay more attention to pregnant patients who call them to say that they are going to visit the dentist. Dental surveys are usually recommended at this time, and obstetricians should be particularly on guard to prevent dental X-rays to the mouth from hitting the pelvic area. It has recently been discovered that one of the largest doses to the reproductive organs is received in the dental chair where 15 or 20 exposures are shot in a sitting position and the rays are directed downward towards the pelvis.

Drs. Martin L. Stone, Louis J. Salerno, Frank J. Borrelli, and Abner I. Weisman, all of the New York Medical College, list the following known hazards of radiation in *New York Medicine*:

1. Gross malformation in the fetus.
2. Subtle changes that are not immediately spotted such as the development of leukemia, other tumor-like abnormal

growths, shortening of life, sterility, psychologic or mental defects, development of cataracts and increased susceptibility to disease.

3. Genetic damage and mutations which may not be apparent.

Dr. Salerno points out that geneticists advise no more than ten roentgens to the reproductive organs during the first 30 years of life. Since natural radiation takes 4.3 of these roentgens, only 5.7 are left for medical, occupational and environmental doses.

Commenting upon the effects of X-rays to medical men, the problem of radiologists dying from leukemia at the rate of eight or ten to one, as compared to other doctors, however, is probably not as accurate as at first appears, Dr. Borrelli explains. A large number of these deaths were found to be among physicians using X-rays in their practice, not qualified radiologists, he adds. X-rays should be restricted to those who are qualified to use them.

That does not mean a restriction to radiologists, but, rather, that doctors in general practice should be qualified in the use of them not only for their own protection, but for the protection of the patient also, Dr. Salerno concludes.

Science News Letter, August 22, 1959

PUBLIC SAFETY

Nitrate Causes Explosion

AMMONIUM NITRATE, generally harmless and an excellent fertilizer, not only blasted out eight city blocks of Roseburg, Ore., but also was responsible for three of the five greatest accidental explosions of the past.

The white solid substance has such peculiar detonation properties that it was not recognized as an explosive for centuries. In fact, in its relatively pure form, it is almost impossible to explode.

Only recently, it has been found that when mixed with fuel oil, ammonium nitrate becomes extremely sensitive to heat and shock. Its explosive power may equal that of TNT. In the past two or three years, the ammonium nitrate-fuel oil mixture has become quite popular as a useful explosive because it is cheaper than dynamite.

Victor E. Haninger, an Interstate Commerce Commission explosives expert, told SCIENCE SERVICE that two of the more important safety precautions for storage of ammonium nitrate are:

1. Do not keep it in unventilated confinement. A build-up of heat and pressure in a container could cause an explosion similar to that in the Texas City disaster 12 years ago.

2. Store it away from sources of fire and other explosives.

A full report on the Roseburg disaster has not yet been made. An explosives-laden truck, parked near a building that caught fire, blew up. The truck was carrying ammonium nitrate and dynamite. It is not known what exploded first, something in the building, the dynamite, or the nitrate.

The Texas City explosion originated in the hold of the ship *Grand Camp*, possibly due to a lighted cigarette butt. The hold, loaded with millions of pounds of ammonium nitrate fertilizer, was closed while the fire smoldered.

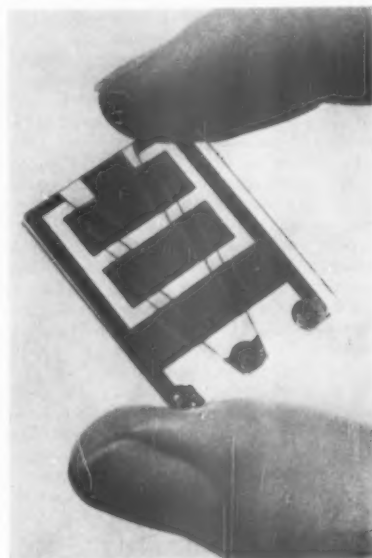
Upon discovery of the burning nitrate bags, the ship's crew attempted to smother the flames with steam. Water might have ruined some of the cargo. Steam served only to make the hold hotter, and the nitrate blew up. A second ship exploded the following day, adding to the catastrophe that almost totally destroyed the city and killed more than 560 persons.

In the same year as the Texas City disaster, 1947, a ship also loaded with ammonium nitrate fertilizer exploded at Brest, France. Twenty-one deaths resulted, and

major destruction spread over a three-mile area.

The worst of the ammonium nitrate explosions took place in 1921 at Oppau, Germany. About 9,000,000 pounds of the substance blew up. The blast left a lake one-third of a mile in diameter where a warehouse and a nitrate plant had been. Major damage covered an area of four miles. Some 1,000 persons died.

Science News Letter, August 22, 1959



TINY SWITCH—A six-cryotron circuit of tin and lead vaporized and deposited as thin films on glass has been developed as a miniaturized electronic switch by scientists at Arthur D. Little, Inc., Cambridge, Mass. Using superconductivity, these devices are expected to make possible drastic reductions in computer construction costs.

ASTRONAUTICS

Vegetable Seeds Retrieved From Space

See Front Cover

HUNDREDS of seeds were specially packaged and included as part of the "pay load" of an Office of Naval Research balloon.

The photograph on the cover of this week's SCIENCE NEWS LETTER gives an underneath view, through a sheet of glass, as a Republic Aviation Corporation engineer prepares spinach and turnip seeds for their flight into outer space.

The seeds were tested for their reaction to the lethal cosmic rays known to exist at altitudes of 100,000 feet or 20 miles. With their recovery they were planted in a special "lunar garden" designed by Republic engineers. There the seeds will be studied for any abnormalities in growth.

Such research is important to future manned space flight.

Science News Letter, August 22, 1959

DEMOGRAPHY

Population: Peace Threat

FAILURE TO control explosive population growth in the Far East "will certainly adversely affect the peace of the world."

Robert C. Cook, president of the Population Reference Bureau, Washington, D. C., foresees "social invention of the highest order" as the only way to cope with the problem.

"Those countries which are prepared to attack this surpassing problem of the balance between births and deaths," he says, "should be given all possible technical assistance."

More than half of the world's population lives in Asia and the Far East. China and India account for almost 70% of this total. Japan, Indonesia, and Pakistan, each with more than 80,000,000 people, are also among the seven most populated countries of the world. Continuance of the present growth rate will double the population in Asia and the Far East in 30 years.

The only population-control success in this area has been achieved in postwar Japan with one of the most dramatic birth-rate reductions "in history." Unlike its neighbors, however, Japan is an industrial, urban nation with high levels of education and large groups of technically skilled workers.

Mr. Cook attributes the drop in population growth to the Japanese Government's emphasis on family planning. Public interest in sterilization and abortion is at least partially responsible. Abortion now seems to be on the decline as a result of a vigorous information program on contraceptives.

Mr. Cook believes the other underdevel-

oped Far Eastern countries cannot match Japan's outstanding success, nor can they approach the problem in the same way.

"The varied social, religious, economic and political 'climates' . . . indicate that different approaches to the problem are essential," he says. "Just what these are remains to be discovered. Acute necessity may bring about some radical and effective social inventions."

Although most of the Far Eastern nations recognize the seriousness of their population trends, Mr. Cook says, they must produce results within the next two decades or face frustration of their hopes for a new life.

Mr. Cook's comments, published in the *Population Bulletin* (Aug.), are based on a recent report by the United Nations Economic Commission for Asia and the Far East.

Science News Letter, August 22, 1959

INDUSTRIAL MEDICINE

Vibration Sickness Points To Need for Study

THE PNEUMATIC drill may be literally knocking the stuffings out of the big-muscled worker hanging on to its handle.

Reduced sharpness of hearing and vision, blood vessel spasms, and damage to bones and joints are but some of the symptoms of vibration sickness.

Scientists know relatively little about this occupational disease, Dr. R. Lomax Wells

of Washington, D. C., told SCIENCE SERVICE. However, vibration sickness is becoming increasingly important with the expansion in road-building and construction. Very little work has been done on the effects of long-term vibration on the human body.

The Russians are also concerned with the problem, according to *Scientific Information Report* (July 3), distributed by the Department of Commerce's Office of Technical Services.

Several researchers report, in a journal which is translated by the Central Intelligence Agency, on the symptoms, causes and treatment of sickness caused by both high and low frequency vibration. Several recommendations are made by the Russian scientists to improve conditions for the worker:

1. Redesign pneumatic drills to suit various types of work. (One researcher suggested a drill that uses a new cycle to reduce recoil.)

2. Standardize industrial vibrations, defining the permissible limits in order to take preventive measures.

3. Make periodic X-ray examinations of the workers' bone tissue and joints.

4. Use devices such as heat-insulating handles on drills and special footwear that absorbs vibration.

One Russian researcher, A. M. Mel'kumova of Moscow, reported that vibration in factories where reinforced concrete items were manufactured affects the nervous system primarily. The morbid condition, she said, is localized in the cerebrum and spinal cord.

Science News Letter, August 22, 1959

CHEMISTRY

Water-Hating DDT Poses New Scientific Problem

DDT, ONE of the oldest and supposedly best known insecticides, hates water, U. S. Department of Agriculture scientists have just discovered.

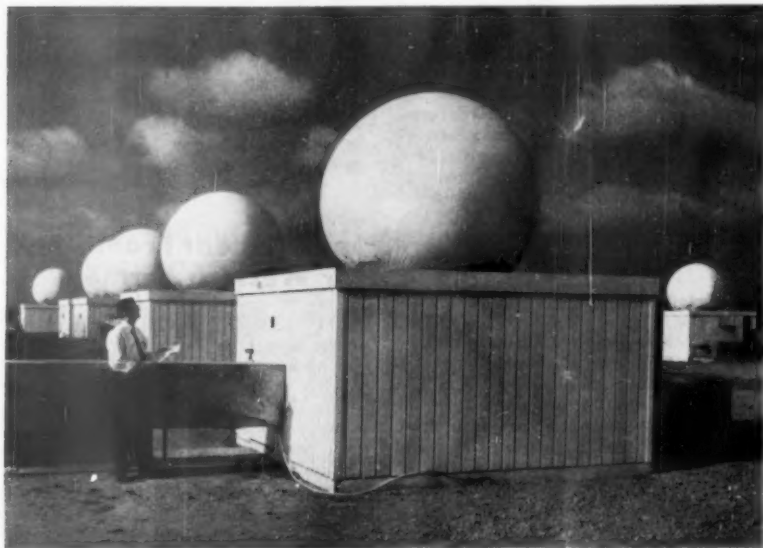
This may help explain some of the strange results when mosquito control workers tried to use the insecticide on ponds, lakes and other mosquito-breeding areas. DDT is so hydrophobic, or water-hating, that it "rushes to get out of suspension." It also tends to concentrate on the upper water surface and to cling to the walls and bottoms of containers, USDA entomologists and chemists report.

In laboratory tests as much as one-third of the insecticide had fled to the walls and bottoms of the containers within two minutes after stirring in one part DDT per 100,000,000 parts of water. It made no difference whether paper, glass or aluminum containers were used. Within 24 hours more than half the DDT, long known for its persistence and non-volatility, had evaporated.

Field studies are underway to see if changes in application methods will lead to more effective results.

Similar tests with other insecticides, parathion, malathion, lindane and dieldrin, did not show this hydrophobic reaction. This action of DDT was discovered by USDA scientists at Orlando, Fla.

Science News Letter, August 22, 1959



MISSILE TRACKERS—The plastic radomes that protect parabolic antennas being used at the Atlantic Missile Range, Cape Canaveral, Fla., get a final check by C. M. Hay, engineer at Convair division of General Dynamics Corporation, San Diego, Calif. Each antenna installation is pressurized to inflate these radomes and to keep out moisture, dust and fungus.

PHYSIOLOGY

Giant Octopus Study Related to Blood Pressure

A BETTER understanding of high blood pressure, allergies and mental health is expected to result from a study of the Pacific giant octopus.

The venomous substance secreted by the salivary glands of the octopus, which has a stunning effect on its prey, is rich in hormone-like substances that are an important part of the intricate biochemistry of the human nervous system.

These include serotonin, a little understood but apparently important hormone or nervous system regulator; histamine, which dilates blood vessels, regulates gastric juices and is involved in inflammations and allergies; and two adrenaline-like hormones, tyramine and octopamine.

Quick-frozen octopus salivary glands are flown to Los Angeles from Puget Sound. The creatures, as large as 100 pounds, are caught alive for the Japanese food market. In the laboratory the glands are processed and the hormone-like substances are extracted for study.

Drs. William G. Clark and William J. Hartman of the University of California Medical School, Los Angeles, and the Veterans Administration Center, Los Angeles, are conducting the study which is being supported by the National Science Foundation and the American Cancer Society.

"If we can learn more of the normal chemistry that gives rise to these nervous system regulators, we will have a better understanding and possibly control of the abnormal chemistry involved in high blood pressure, various mental disorders, inflammation and allergies," the investigators said.

Science News Letter, August 22, 1959

PUBLIC HEALTH

Polio Hits Unvaccinated Boy Block From Clinic

PARALYTIC POLIO struck a 17-year-old boy who has never received a Salk shot although he lives one block from a clinic where the vaccine is given free.

He is now hospitalized, both legs paralyzed. This boy is one of more than 1,560 persons paralyzed this year by the polio virus. This is more than twice the 579 cases reported to the U. S. Public Health Service at this time last year.

As the number of cases continues to climb, presently there are more than 2,480 reported cases of all types of polio, more people are getting out for their Salk shots. This has resulted in a drain on the supply of available vaccine because many private, local and state clinics are open more hours to give the vaccine, and because many new clinics have been established for the emergency period.

Despite this seemingly pessimistic news, public health officials expect the drug industry to be able to up their supply of the vaccine and relieve the situation. More than 2,000,000 doses have been delivered to doctors, clinics and other centers for vaccination each week for the past several

weeks. Officials expect this amount to increase shortly.

Polio severely hit Des Moines, Iowa, New Haven, Conn., Kansas City, Mo., the states of Texas, California, Alabama and Pennsylvania, statistics from the PHS reveal. Alaska has reported six cases so far.

Last year, 322 cases of paralytic polio were reported in persons who had had the three Salk shots. Dr. C. C. Dauer, medical adviser for the National Office of Vital Statistics, explained that although a person has had three shots, if he is severely paralyzed, this usually eliminates other viruses as a cause of the paralysis. He probably has polio. Salk shots offer between 70% and 90% protection against paralytic polio.

Then, too, there are a number of diseases caused by viruses which have been implicated as a cause of a muscular paralysis that resembles crippling polio, Dr. Vernon Knight of the National Institute of Allergy and Infectious Diseases, Bethesda, Md., told SCIENCE SERVICE.

If a victim of paralysis is examined after the culprit virus has left his body, doctors can many times determine if the disease is polio by measuring the level of the patient's polio antibodies, he explained. If these antibodies are extremely low, then some other virus becomes suspect.

Most of the polio cases reported through the PHS are carefully screened to establish the presence of one of the three polio viruses as the cause of the paralysis.

Science News Letter, August 22, 1959

BIOLOGY

Biologist Predicts Lawns That Need No Mowing

TEN YEARS FROM NOW you will be able to sit on a lawn that needs no mowing and reach up to pick a normal-sized peach from the low branches of a dwarf tree.

This will be possible because within 10 years we will have an "anti-gibberellin," Dr. James A. Lockhart, biologist at the California Institute of Technology has predicted.

Gibberellin, the hormone that plants secrete to induce stem growth, has been widely studied, Dr. Lockhart pointed out. Considerable research is under way to discover an anti-gibberellin which would suppress the growth of plants without affecting their ability to flourish and yield normal crops.

An application of this anti-gibberellin, perhaps in a spray form or as an additive to fertilizer, could slow plant growth so that grass, for example, would need virtually no trimming. Fruit trees treated with the anti-growth substance would be the same as normal trees except for their shortened stems or trunks. Dr. Lockhart based his prediction of the properties of the anti-gibberellin on what he has learned about gibberellin.

The hormone affects young cells, especially in the plant stem, promoting stem growth by counteracting the effects of sunlight. Light slows down stem growth by making the young cell walls more rigid. Gibberellin enables the cell walls to stretch, growing longer but not wider.

Science News Letter, August 22, 1959

IN SCIENCE

ENTOMOLOGY

Mysterious Fly Poses Threat to Cattle in U. S.

A FOREIGN fly that could be mistaken for the common house fly has been acting differently in its American home. These changes may be a warning of a new pest in the making, a U. S. Department of Agriculture researcher said.

The fly, *Musca autumnalis*, was first reported in Long Island, N. Y., in 1953. Very little is known of its life history or habits. While it is considered mainly a nuisance in its native lands, the fly is proving to be more than a nuisance here, Joseph W. Gentry said.

Potentially, the fly is as menacing to the dairy industry as the Japanese beetle has become to gardeners and farmers. Historically, their invasion of and spread in the United States are not dissimilar.

It has built up to large numbers and is currently "seriously annoying" cattle in Ohio, Indiana, Illinois and New York. Its behavior in the U. S. is largely unpredictable, Mr. Gentry pointed out, since its environment is different. Natural controls, such as parasites that prey on this species of fly, apparently are also missing.

It is too widespread to attempt any eradication program now, the USDA researcher said. At first it was considered as merely a minor garden pest. The beetle increased in numbers, becoming a threat to many crops, until now there are strict quarantine and other control measures in effect.

The USDA's Plant Pest Control Division, survey and detection operations, receives regular reports on insect conditions throughout the nation. State clearing houses send the national office reports on significant "finds," many made by the general public, thereby maintaining a close check on the insect population.

Science News Letter, August 22, 1959

AGRICULTURE

Short Wheat Promising For Western Farmers

STIFF-STEMMED semidwarf wheat may be the answer for Pacific Northwest growers whose wheat suffers extensively from lodging, or being beaten down by the elements. The semidwarf varieties, Japanese-American blends, resist lodging and stand erect on fertile soil with heavy nitrogen fertilization.

Scientists of the Department of Agriculture and the Washington, Oregon and Idaho Agricultural Experiment Stations are co-operating in developing and testing the grains. Because the milling and baking qualities of the semidwarfs still must be improved, the wheats probably will not be available to growers until 1963 or 1964, the USDA said.

Science News Letter, August 22, 1959

CE FIELDS

METEOROLOGY

Seek Way to Measure Changing Height of Smog

A \$10,000 study at the University of California, Los Angeles, supported by the U. S. Weather Bureau and the U. S. Public Health Service, will attempt to find a way of continuously measuring the height of smog.

The results may help meteorologists make earlier and more accurate smog forecasts, said James G. Edinger, assistant professor of meteorology at UCLA.

The height of the polluted air layer is limited by the base of the inversion layer, which serves as an effective lid on the smog layer. With a low inversion base, the pollutants are confined to a shallow layer, resulting in more concentrated smog than when the base is high and the pollutants are dispersed in a deep smog layer.

The height of the inversion base varies from zero to 4,000 feet above the earth surface, depending on the time of the day, the winds, and the seasons.

If an inexpensive method can be found for running a continuous check on the height of the base, air pollution experts should be able to learn more about the causes of inversion, forecast smog conditions more accurately, and give earlier warning for anti-smog emergency actions.

Dr. Edinger will investigate methods such as sending up small measuring instruments called radiosondes, using radar detection techniques, and, at night, following the beams of searchlights.

In other phases of his project, he will measure the vertical distribution of pollutants in the smog layer, and how the atmosphere diffuses pollutants from various complex sources.

Science News Letter, August 22, 1959

ZOOLOGY

Interbreeding May Affect Mouse Survival Ability

HOW MATE selection influences a species' survival will be tested with mice.

Dr. Howard McCarley, zoology professor at Southeastern State College, Durant, Okla., has received a National Science Foundation grant to carry on a four-year investigation of factors that operate to keep closely-related species of wild animals from interbreeding. The experiment will begin Sept. 1.

He chose wood mice and cotton mice for his experiment, and this summer began assembling the two species while teaching at the University of Oklahoma's Biological Station on Lake Texoma. Construction of pens for the mice has begun at Durant.

"I will start with a group of each kind of mice enclosed in pens that will permit the animals to cross," Dr. McCarley said. "In

this way I will learn whether, if they have a choice, they will mate only with their own kind."

In the second stage of the experiment he will pen up females of one species with males of the other, forcing them to interbreed. This situation will produce hybrids, even though none result from mating by choice in the first stage.

In the third stage, the hybrids, along with equal numbers of unmixed cotton mice and wood mice will be released together in a large pen and given a reduced food supply. Thus Dr. McCarley will learn whether the hybrids are at a disadvantage under competitive conditions.

"The hybrids presumably will not be specifically adapted to live either in the low-land habitat of the cotton mice, or in the upland habitat of the wood mice," he commented, "but the experiment will be made under conditions designed to test this hypothesis."

Dr. McCarley formerly worked with the Atomic Energy Commission in an experiment on effects of radiation on these two species of mice.

Science News Letter, August 22, 1959

BIOLOGY

Harmful Beetle Infests Parts of Florida

A MAY BEETLE has arrived in Miami, Fla., and seems to be there to stay.

Once known only in Cuba where it is a sugarcane pest, this is the first record of the beetle in the United States. How serious the insect may be as a pest in the U.S. is not yet known, Kelvin Dorward told SCIENCE SERVICE.

A member of the U.S. Department of Agriculture's plant pest control survey and detection group, Mr. Dorward explained that literature on the May beetle is scarce and it will be some time before all the needed information is in.

Reports from Miami describe the insects as feeding on at least 15 species of native and exotic trees. Damage was "quite severe" on several plants. More than 400 adults were collected in less than one hour by hand picking. However, this does not give a good idea of how widespread the insect infestation may be, Mr. Dorward explained. Even though they appear to be in plentiful supply, their tendency to form clusters makes it difficult to evaluate the seriousness of the May beetle invasion. It is possible to collect many in one local area and then not find any more.

A state survey is now being conducted, and the USDA's detection group is requesting further surveys to learn the extent of the infestation. All inspectors in southern Florida are alerted to look for these beetles and to check for them at lights at night.

Described as a "very ordinary beetle," this species is a small, brown beetle about one-half inch long. Its scientific name is *Phyllophaga bruneri*. Insects in this group are leaf feeders as adults and root feeders as larvae. May beetles, or June beetles as they are also known, are preyed upon by several insect families.

Science News Letter, August 22, 1959

BIOLOGY

Snatching Bats Aids Studies on Drugs

WILD BATS are being caught for use in medical research.

The business of catching bats is a chancy one, J. C. Nicholls says. He brings them back alive from the wilderness around his home in Murphy, N. C.

Many of the bats, *Myotis lucifugus*, are caught from deserted house attics beside a nearby lake, Mr. Nicholls explained.

If there are not enough bats nearby, Mr. Nicholls travels to where they are, sometimes all the way to Florida, 1,000 miles away. He notes that if the bats are in the open, he can catch them rapidly with a large net without harming them. However, if they are back in crevices, it takes a wire to pull them out.

If the bats begin flying about, great skill and quickness are needed to catch them.

"My speed of reaction is 33 hundredths of a second—the average good driver's is about 66 hundredths," he explained.

When bats are caught in mid-flight, their wings are often broken. So these cannot be shipped because they "would perhaps die of shock en route, or be unusable upon receipt," he pointed out.

Bats are used at the Nordson Pharmaceutical Laboratories in Irvington, N. J., to test the effects of drugs on blood flow and vessel constriction. Bats are the only mammals in which vascular changes can be observed visually under close to normal conditions without anesthesia or surgery. This is accomplished by observing their paper-thin wings.

Mr. Nicholls receives two dollars per bat, less "the usual two percent cash discount."

Science News Letter, August 22, 1959

ENTOMOLOGY

South American 'Hopper' Has a "Swimming Time"

ONE SOUTH American insect seems to be having the best of two possible worlds: water and land.

The grasshopper, which has the scientific name *Marellia*, is well-equipped for swimming although it is normally an air-breathing insect. From an evolutionary viewpoint, it is apparently in the process of changing from a land to a water animal, Dr. C. S. Carbonell of the University of Uruguay says.

In a report published by the Smithsonian Institution, he describes how the insect is adapted to its double life.

The most notable adaptation is the grasshopper's "oar-shaped" hind legs. Its eggs are laid underwater where they adhere to the under surfaces of floating leaves. Although the insect lives on the floating leaves of water lilies, it swims easily both on or under the surfaces of ponds and stagnant streams.

Today, specimens of this water grasshopper have been found in Argentina, Uruguay, eastern Peru, British Guiana and Surinam.

Science News Letter, August 22, 1959

ASTRONOMY

Saturn Still Visible

New star groups, characteristic of the autumn skies, are coming into view. Among the planets that shone earlier, only Saturn is now visible.

By JAMES STOKLEY

SATURN is the only planet visible on September evenings. The others that shone brightly in the early part of the summer are gone from view.

Coming into prominence in the east are star groups which could not be seen earlier, and which are characteristic of the skies of autumn.

Brightest star or planet now visible is Vega, in the constellation of Lyra, the lyre. Its position is shown on the accompanying maps. These depict the sky at about 10:00 p.m., your own kind of standard time (or 11:00 p.m. daylight saving time) at the first of September, an hour earlier at the middle of the month and two hours earlier at the end.

Lyra is high in the west, alongside Cygnus, the swan, directly overhead, with the bright star Deneb. Altair, in Aquila, the eagle, is slightly to the south. Between the two birds, by the way, there are two interesting little constellations which contain no first magnitude stars, but are now in their best position for viewing. One is Sagitta, the arrow; the other is Delphinus, the dolphin, sometimes known as "Job's coffin."

Directly below Aquila, perhaps the source of the arrow, is Sagittarius, the archer.

Saturn in Sagittarius

It is in this constellation that Saturn now appears. About as high above the horizon, and farther left, is Piscis Austrinus, the southern fish, with the star called Fomalhaut. It appears much higher than this in our skies, but from more southerly countries it climbs well up into the heavens.

To the northwest, near the horizon, is the familiar figure of the great dipper, which is part of Ursa Major, the great bear. At the right of the dipper's bowl are the "pointers," whose direction indicates the pole star, Polaris, in Ursa Minor, the little bear, a little higher. And by following the curve of the dipper's handle to the left, you come to Arcturus, in Bootes, the bear-driver, close to the horizon and about to disappear from the evening skies until late next winter.

Low in the northeast, Capella, the bright star in Auriga, the charioteer, has come into view. During the coming months this will become more and more prominent in the evening, and will be joined by a group of brilliant stars that shine brightly in the winter sky.

Above it is Perseus, the champion, in which you can see the variable star Algol. This is a moderately bright star of the second magnitude, but every 2 days 20 hours 48 minutes it fades to about a third of its

normal brightness. Actually, it is a double star. One component is much fainter than the other, which is regularly eclipsed as they revolve around each other.

As for the other planets that are sometimes visible to the naked eye, Mercury is directly behind the sun on Sept. 17, and is hidden in the solar glare. On Sept. 1, Venus is in front of the sun, and similarly hidden. However, by the end of the month it will have moved far enough to the west of the sun that it will rise before that star and will shine brilliantly low in the east at dawn.

Mars also is coming very close to the sun, and will pass behind it at the end of October. Jupiter is visible in the early evening. At dusk it is low in the southwest, and sets about three hours after sunset, before the times for which our maps are drawn. It is in the constellation of Libra, the scales.

Sometimes it happens that a person who knows the skies well, and is familiar with the constellation figures, looks at one and finds a star there that shouldn't be! Apparently a "new star" has appeared. This happened, for example, in June, 1918, when one suddenly flashed out in the constellation of Aquila. For a little while it was brighter than any other star of the nighttime sky, but then it faded out. And late

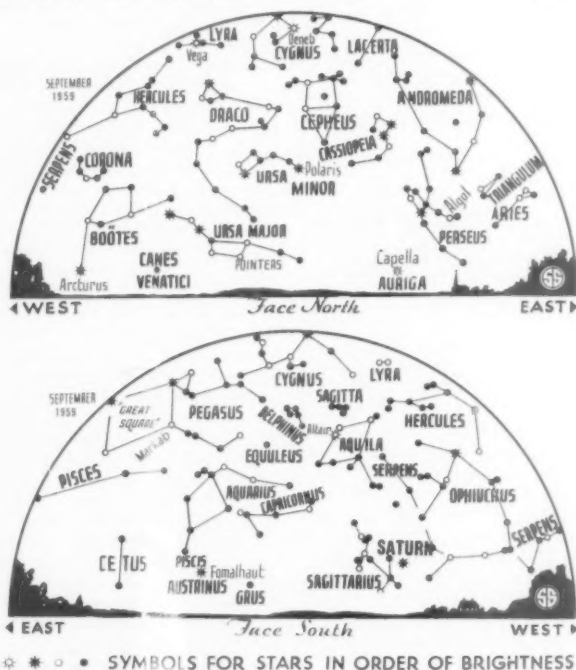
in 1934 another appeared in Hercules. It was about halfway between Vega and the star nearest to it, on the map of the northern sky, in Draco, the dragon. For a while this was one of the most brilliant stars in the sky; then it, too, faded to obscurity.

Perhaps a dozen or more times each year such a "nova" shines out in our stellar system, the Milky Way galaxy. Most of them are so far away that they cannot be seen without a telescope. Actually, however, they are not really new stars; they are old ones that suddenly explode and become a hundred thousand or more times as bright as they were.

Rare Supernovae

Much rarer than an ordinary nova is a supernova, such as the one that suddenly shone out in Cassiopeia (in the northeast, to the right of Polaris) in 1572. On the average, these appear in the Milky Way galaxy about once in several hundred years. Despite this, another occurred in Ophiuchus (shown in the southwestern sky) in 1604. Not since then has there been one in our galaxy, although astronomers can often observe them in others of the millions of galaxies beyond the limits of ours. These, of course, can only be observed through large telescopes, but that is because they are so far away. When it happens, the supernova is often more brilliant than the rest of the billion or so stars in that galaxy.

An ordinary nova is apparently caused by some sort of upset in the equilibrium of the interior of a star. A nuclear explosion, something like that of a hydrogen bomb, but on



a far larger scale, then occurs. The whole star brightens and some of its outer layers are shot off. However, the loss is not more than about a ten-thousandth of the total mass, which is not too serious, and after the outburst the star seems to return to its previous state.

Supernovae are of two kinds.

One is simply a very large nova, but the other is a far more violent affair, with as much as a tenth of the star's mass being ejected and, when it is over, the star is radically changed. Astronomers have not yet found out just what happens. Fortunately, there does not appear to be any danger that the sun may become a nova. If it did, all life on earth would be wiped out, far more effectively than from the most widespread nuclear war.

Celestial Timetable for September

Sept.	EST	
1	1:00 a.m.	Venus in front of sun.
2	8:55 p.m.	New moon.
4	7:12 a.m.	Moon passes Mars.
7	12:54 a.m.	Algol (variable star in Perseus) at minimum brightness.
	12:00 noon	Moon nearest, distance 229,100 miles.
8	4:40 a.m.	Moon passes Jupiter.
9	5:07 p.m.	Moon in first quarter.
	9:42 p.m.	Algol at minimum.
10	4:56 p.m.	Moon passes Saturn.
12	6:31 p.m.	Algol at minimum.
16	7:51 p.m.	Full moon.
17	4:00 p.m.	Mercury behind sun.
22	8:00 p.m.	Moon farthest, distance 251,500 miles.
23	2:09 p.m.	Sun over equator, autumn commences in Northern Hemisphere.
24	9:22 p.m.	Moon in last quarter.
29	1:03 p.m.	Moon passes Venus.
	11:23 p.m.	Algol at minimum.
		Subtract one hour for CST, two hours for MST, and three for PST.

Science News Letter, August 22, 1959

Do You Know

The *poison ivy fruit* is white, waxy looking, and resembles mistletoe.

Tuberculosis of bovine origin is now quite uncommon in the U.S.

In the U.S. more than one-fourth of the *diseases* reported nationally may be transmitted from animals to man.

The death rate from *ulcerative colitis* has been cut from every second patient 50 years ago to one in 10 or 20 today in the U.S.

Cosmic ray intensity at high altitudes is over four times more intense in the Arctic and Antarctic than at the equator.

All of the major causes of *infant mortality*, except post-natal asphyxia, showed a decline in the U.S. during the decade ending in 1955-56.

The *Japanese beetle* lives as a white grub in soil for most of its life, plant and grass roots making up the main portion of its diet during this period.

GET READY FOR THE SPACE and SCIENCE ERA! SEE SATELLITES, MOON ROCKETS CLOSE-UP

AMAZING OPTICAL BUYS

and OTHER SCIENTIFIC BARGAINS

See the Stars, Moon, Planets Close Up!

Photographers!

Adapt your camera to this Scope or excellent Telephoto shots and fascinating photos of moon!

3" ASTRONOMICAL

REFLECTING TELESCOPE

Famous Mt. Palomar-Type

60 to 160 Power—An unusual Buy!

You'll see the Rings of Saturn, the fascinating planet Mars, huge craters on the Moon, Star Clusters, Moons of Jupiter in detail. Galaxies! This is a fine quality, American-made telescope engineered and built for clear definition and resolution. Equatorial mount with lock on both axes—you automatically follow stars across the heavens. Aluminized and overcoated 3" diameter high-speed 1/10 mirror. Each mirror Focuses! Tested. Telescope comes equipped with a 60X eyepiece and a mounted Barlow Lens, giving you 60 to 160 powers. Accessory eyepieces available for higher powers. An Optical Finder Telescope, always so essential, is also included. Sturdy, hardwood portable tripod. Free with scope: Valuable STAR CHART and 272 page "Astronomy Book." Stock No. 85,050-Q.....\$29.95 Postpaid

This is an actual photograph of the moon taken through our Astronomical Telescope by a 17-year-old student.

Terrific Buy! American Model

OPAQUE PROJECTOR

Projects illustrations up to 3" x 3 1/2" and enlarges them to 4' x 4' wide. No film or negatives needed. Projects charts, diagrams, pictures, photos, lettering in full color or black-and-white. Operates on 115-volt, A.C. current. 6-ft. extension cord and plug included. Operates on 60 watt bulb not included. Size 12" x 8" x 4 1/2" wide. Weight 1 lb. 2 oz. Plastic case with built-in handle. Stock No. 70,199-Q.....\$7.95 postpaid

WAR SURPLUS—INFRARED SNOOPERSCOPE

Gov't. Cost \$900—Bargain at \$39.50

Converts infrared to visible light. See in total darkness without being seen. Use in lab, factory, classroom, etc. Completely portable. Operates on two flashlight batteries (not included). Image is quite good, may be made even better by careful focusing. Size 11 1/2" x 8" x 8" Weight with carrying case 12 lbs. No infrared light source is furnished. (See below.) Stock No. 85,098-Q, \$39.50 f.o.b. Barrington, N.J. INFRARED LIGHT SOURCE AVAILABILITY! You will need a 6-volt transformer or 6 V auto battery to operate. Stock No. 80,035-Q.....\$10.00 postpaid

ASTRO COMPASS AND STAR FINDER

Gov't. Cost \$75—Price \$14.95 Postpd.

Determines position of stars quickly. Shows various celestial coordinates. An extremely useful star finder which can be rotated through 60° angles along calibrated degree scale. Has single eye lens with viewing stop, two spirit levels for aligning, tangent screw with scale for fine precision readings, azimuth scale graduated in two-degree intervals, adjustable tilting azimuth scale for angle reference of stars on distant objects. War Surplus. Gov't. cost \$75. Instructions, carrying case included. Stock No. 70,200-Q.....Only \$14.95 postpaid

D-STIX CONSTRUCTION KITS

Great Teaching Aid!

Newest, handiest visualizing and demonstration tool for teachers—elementary, high school or college. Colored wood sticks 1/4" thick and "easy-on" rubber joints approx. 3/16" diam. fit together quickly to form all kinds of simple or complex shapes, structures. Ideal for teaching mathematics, chemistry, physics, design, engineering, architecture, abstract art—or for developing children's interest in form and structure. Work out geometric figures, molecular structures, structural members, configurations and perspectives, models of many types. 3-dimensional visualization adds interest—speeds understanding. Used by professional planners, designers. Money-back guarantee. Stock No. 70,209-Q (230 pcs.).....\$3.00 Postpd. Stock No. 70,210-Q (370 pcs.).....\$5.00 Postpd. Stock No. 70,211-Q (452 pcs.).....\$7.00 Postpd.

INSTRUCTION BOOKLETS

	Stock No.	Price Postpd.
How to Build Projectors.....	9014-Q	30¢
Homebuilt Telescopes.....	9015-Q	30¢
All About Telephoto Lenses.....	9036-Q	60¢
Ultra Close-Up Photography.....	9042-Q	60¢
Infra-red Light and Its Uses.....	9040-Q	75¢
Homemade Stereo-Adapters.....	9032-Q	30¢
Homemade Stereo-Viewers.....	9034-Q	30¢
Time in Astronomy.....	9054-Q	60¢
Fun with Optics.....	9055-Q	85¢
How to use your Telescope.....	9055-Q	60¢

(Includes directions on how to take photographs thru your telescope)

4 1/2" ASTRONOMICAL TELESCOPE

Mt. Palomar type! Up to 270 Power. A fine Reflector Telescope complete with real Equatorial Mount and Tripod and 6X Finder. Aluminum tube 4 1/2" dia. mirror, real and pinhole focusing eye-piece holder. 2 eyepieces and mounted Barlow Lens for 40X, 60X, 120X and 270X. Low cost accessory eyepiece available for higher powers. Shipping weight approx. 25 lbs. Stock No. 85,006-Q, complete \$74.50 f.o.b. Barrington, N.J. Same Telescope as above but equipped with Electric Clock Drive—Stock No. 85,004-Q, \$111.50 F.O.B. Barrington, N.J.

WORLD FAMOUS ABACUS

Beats Adding Machines!

One of man's oldest, fastest instruments. Adds, subtracts, multiplies, divides. Proficient abacus operators add and subtract faster than calculating machines or slide rules. An important educational tool for classroom or individual. 6-row, ten-bead decimal system. Made of beautiful walnut, 9 1/2" x 7 1/2". Stock No. 70,201-Q.....\$4.95 postpaid

REPLICA GRATING

Low, Low Cost

Take Unusual Color Photos at Night

It's here—after decades of effort. Replica Grating on film—at very low price! Breaks up white light into full spectrum colors. An exciting display, 18,400 lines per inch. Diffraction Grating has been used to answer more questions about the structure of the material world and the universe than any other single device. Use it for making spectrograms, for experiments, as a fascinating novelty. First time available such large size—so cheaply. Comes in clear plastic protector. Stock No. 80,202-Q...Includes 2 pieces 8" x 5 1/2" —1 transmission type, 1 reflecting type. \$2.00 Postpd.

BUILD A SOLAR ENERGY FURNACE

Wonderful Science Project Build your own Solar Furnace for experimentation—many practical uses. It's easy—inexpensive. Use your scrap wood. We furnish instruction booklet. This sun powered furnace will generate terrific heat—2000° to 3000°. Fuses enamel to metal. Sets paper aflame in seconds. Lens—1 1/2" diameter, f.l. 14" Stock No. 70,130-Q...Fresnel Lens...\$6.00 Postpaid

HORSE SHOE MAGNETS

Set of 2—approximately 1 1/2 oz. ea. Stock No. 40,275-Q (set of 2) \$1.00 postpaid Giant Size War Surplus—Will lift over 125 lbs. Stock No. 70,183-Q \$8.50 ea. postpd. (Send Check or M.O.—Money-Back Guarantee)

FREE CATALOG-Q

100 Pages! Over 1000 Bargains!

America's No. 1 source of supply for science experimenters, hobbyists. Complete line of Astronomical Telescope parts and assembled Telescopes. Also huge selection of lenses, prisms, war surplus optical instruments, parts and accessories. Telescopes, microscopes, satellite scopes, binoculars, infrared sniffer-scopes, items for making "Sci-Fair" projects, math learning and teaching aids.

Request Catalog-Q

Order by Stock No.—Send Check Satisfaction Guaranteed

ORDER BY STOCK NUMBER, SEND CHECK OR MONEY ORDER. SATISFACTION GUARANTEED!

EDMUND SCIENTIFIC CO., BARRINGTON, N. J.

Books of the Week

For the editorial information of our readers, books received for review since last week's issue are listed. For convenient purchase of any U. S. book in print, send a remittance to cover retail price (postage will be paid) to Book Department, Science Service, 1719 N Street, N.W., Washington 6, D. C. Request free publications direct from publisher, not from Science Service.

ABOUT RIVERS—Albert Dickey—*Melmont Publ.*, 32 p., photographs, \$2.50. Tells young readers some interesting facts about rivers and their uses.

AQUARIUM FISH IN COLOR—G. Mandahl-Barth—*Dutton*, 138 p., 225 illus. by N. Norvil, \$2.95. Little handbook describing 188 species for the student and collector of tropical aquarium fish.

AROMATIC SUBSTITUTION: Nitration and Halogenation—P. B. D. de la Mare and J. H. Ridd—*Academic*, 252 p., \$9. Monograph discusses in detail two of the most important electrophilic aromatic substitutions. Each chapter followed by list of references.

BRIMSTONE: The Stone That Burns. The Story of the Frasch Sulphur Industry—William Haynes—*Van Nostrand*, 308 p., illus., \$5.95. Based on a work published in 1942, called *The Stone That Burns*, this is the story of the American sulphur industry from early days in Louisiana to today's new developments in France and Canada.

CELL, ORGANISM AND MILIEU—Charles E. Wilde and others, Dorothea Rudnick, Ed.—*Ronald*, 326 p., illus., \$8. Contributions to the 17th Symposium of the Society for the Study of Development and Growth, concerned with the concept of differentiation and growth in response to a changing chemical environment. Bibliographies included.

CLOUDS—Thomas McGrath—*Melmont Publ.*, 32 p., illus. by Chris Jenkyns, \$2.50. Second grader will enjoy the illustrations and learn some big words about various clouds.

CONCEPTUAL THINKING: A Logical Inquiry—Stephan Korner—*Dover*, 301 p., paper, \$1.75. Reprint of first edition.

DISCOVERER OF THE NORTH POLE: The Story of Robert E. Peary—Marie Peary Stafford—*Morrow*, 220 p., illus. by Walter Bucher, \$4. The story of Arctic expeditions before the age of modern vehicles, told for young people.

DOCTOR PARACELSEUS—Sidney Rosed—*Little*, 214 p., illus. by Rafacello Busoni, \$3.50. Biography for boys and girls.

ELEMENTS OF CHORDATE ANATOMY—Charles K. Weichert—*McGraw*, 2nd ed., 503 p., illus., \$6.75. Designed for a one-semester course in comparative vertebrate anatomy.

THE ENGLISH HEALTH SERVICE: Its Origins, Structure and Achievements—Harry Eckstein, foreword by James Howard Means—*Harvard Univ. Press*, 289 p., \$5.50. Author spent two years in England, evaluating and analyzing the successes and failures of the first decade of operation of the British National Health Service.

FLATTOP—Barrett Gallagher, foreword by Admiral Arleigh Burke, U.S. Navy—*Doubleday*, 128 p., 160 photographs, \$5.95. Describes in pictures and text the story of American aircraft carriers in action from 1944 to 1959.

THE FLOORS OF THE OCEANS I. The North Atlantic. Text to Accompany the Physiographic Diagram of the North Atlantic—Bruce C. Heezen, Marie Tharp and Maurice Ewing—*Geological Soc. of Am.*, Special Paper 65, 122 p., illus., \$4.50. This corrects listing in *SNL* June 14, 1959, which erroneously quoted price as \$1.50, the price of the map alone.

FREE ASSOCIATIONS: Memories of a Psychoanalyst—Ernest Jones—*Basic Bks.*, 264 p., illus., \$5. Memoirs of the distinguished psychoanalyst of Welsh origin who became known for his biography of Sigmund Freud.

FROM DEATH-CAMP TO EXISTENTIALISM: A Psychiatrist's Path to a New Therapy—Viktor E. Frankl, transl. from German by Ilse Lasch, preface by Gordon W. Allport—*Beacon Press*, 111 p., \$4. Personal narrative of a psychiatrist's experiences during three years spent as a Nazi prisoner in four different concentration camps.

GROWING ORANGES—Dorothy Traver and Art Miller—*Melmont Publ.*, 30 p., photographs by Art Miller, \$2.50. Tells children how oranges are grown, in pictures and simple language.

HERE COME THE RACOONS!—Alice E. Goudy—*Scribner*, 94 p., illus. by Garry MacKenzie, \$2.50. Life story of racoons told engagingly for young readers.

RAPID CALCULATIONS

by A. H. Russell

CAN YOU—

- Name the day of the week on which May 1st 1485, fell . . .
- Give the cube root of 42508549 . . .
- Tell how long it takes for money to double itself at 5% compounded annually . . .

IN 5 SECONDS?

- or, Multiply 56837 by 2467
- Divide 385623874169 by 89 . . .

IN 20 SECONDS?

YOU CAN—

perform these and many other feats **MENTALLY** after studying this book!

Now you can learn how easily and quickly work with figures can be speeded up through use of simple short cuts and elimination of needless number juggling. Save time, drudgery.

Covering a wide range, from simple arithmetic on up, the instructions given can be applied to an endless variety of activities. The book will be found especially valuable to executives and administrators, engineers and scientists generally, doctors, druggists, stock market traders, bookkeepers and accountants, and to workers in numerous other occupations involving number calculations. Not least, the average person will find he is enabled to check his everyday accounts more quickly, more accurately, and with infinitely less bother.

287 Pages • Self-teaching Exercise with Answers \$3.95 • 10-day Money-Back Guarantee

EMERSON BOOKS, Inc., Dept. 764-L
251 West 19th Street, New York 11

The Battery That's Used in Guided Missiles Now Released as Government Surplus

For Photography, Aircraft, Models, Searchlights,

Radios, etc. \$1.95 ea. Postpaid

Interchangeable Nickel-Cadmium alkaline storage batteries designed for "NIKE" Missile and now surplus due to design change. A lifetime battery with no known limit of service (over 5000 recharges on test without loss of capacity).

Other features: Virtually indestructible, compact & lightweight, withstands heavy shock and vibration. Flat voltage curve during discharge retains charge year or more, high discharge rate up to 50 amps. for this cell, no corrosive fumes to harm clothing or equipment, spill-proof construction, discharge in any position, indefinite storage without deterioration, operates in temperatures —60°F to +200°F. Each cell is approx. 10 ampere hour capacity. Nominal voltage per cell is 1.2 volts. (A 6 V. battery requires 5 cells.) Cell size 6" H. x 1 1/2" W. x 1 1/2" T. Wt. 6 oz. ea. Uses Potassium-Hydroxide (30%) electrolyte. Negligible loss during lifetime service. Add only distilled water once a year. A fraction of Government cost.

Used Test Cells \$1.95 ea. Postpaid

Brand New Cells 2.95 ea.

All cells guaranteed to your satisfaction or money refunded (less postage).

ESSE RADIO COMPANY, Dept. 6J

42 W. South St. Indianapolis 25, Indiana



A HISTORY OF EMBRYOLOGY—Joseph Needham, rev. with Arthur Hughes—*Abelard-Schuman*, 2nd ed., 304 p., illus., \$7.50. Traces the roots of chemical embryology in history and presents a wealth of data on many interesting aspects of the subject. Fully annotated, 50-page bibliography included.

HOW TO USE YOUR TELESCOPE—Edmund Scientific Co., 40 p., illus., paper, 60¢. Tells how to select your telescope, how to use an equatorial mount, and how to find sky objects. Contains hints on observing planets and sun, on aligning optical elements and on photography with your telescope.

HYPERSONIC AERODYNAMICS—Robert Wesley Truitt—*Ronald*, 462 p., \$10. Discusses the application of magneto-aerodynamics to the design of re-entry nose cones. Textbook for engineering students and practicing engineers in the missile field.

INTRODUCTION TO THE LAPLACE TRANSFORM—Dio L. Holl, Clair G. Maple and Bernard Vinograd—*Appleton*, 174 p., \$4.25. Course for third year engineering students.

ION EXCHANGE: A Laboratory Manual—J. E. Salmon and D. K. Hale—*Academic*, 136 p., illus., \$5. Introductory course presenting the fundamental principles and offering guidance in practical problems arising in the application of ion exchange.

METHODS OF VEGETATION STUDY—Edwin Allen Phillips—*Holt*, 107 p., illus., \$2.95. Simplified presentation of several different systems of vegetation study used on the European continent, in Great Britain and America.

1001 QUESTIONS ANSWERED ABOUT THE MINERAL KINGDOM—Richard M. Pearl—*Dodd*, 326 p., illus., \$6. Easy reference for the general reader, answering questions about rocks, ores, gems, meteorites, radioactive minerals, fossil fuels and many other phases of the mineral world.

PHILOSOPHY AND THE PHYSICISTS—L. Susan Stebbing—*Dover*, 295 p., paper, \$1.65. Reprint of first edition which appeared in 1937.

PLANTS THAT CHANGED THE WORLD—Bertha S. Dodge—*Little*, 183 p., illus. by Henry B. Kane, \$3.50. Describes the origin of some of the plant products that have helped make history, such as the fever bark tree, the abaca plant and the breadfruit. Bibliography included.

PRINCIPLES AND PRACTICES OF GAS CHROMATOGRAPHY—Robert L. Pecsok, Ed.—*Wiley*, 226 p., illus., \$6.75. Outgrowth of an introductory course in gas chromatography, a field whose phenomenal growth is reflected in the fact that three-fourths of the 710 papers listed in the bibliography have appeared in the last three years.



NEW SET FOR YOUNG PHYSICISTS
\$2.98
plus postage

This new Young Physicist set is wonderful for budding scientists. They can build a model turbine, study how a submarine dives, how sunken ships are raised and performs other physics experiments using the materials in this new set. All experiments are done with air and water and are completely safe. Incl. 16-page instruction book. \$2.98 plus 25¢ postage & handling.

MEDFORD PRODUCTS INC.

Box 39, Dept. SN, BETHPAGE, N. Y.

THE PRINCIPLES OF HUMANE EXPERIMENTAL TECHNIQUE—W. M. Russell and R. L. Burch—Methuen, 238 p., illus., \$4.35. This study is the outcome of several years of research on the progress of humane technique in the laboratory, sponsored by the Universities Federation for Animal Welfare in Great Britain.

RECENT RESEARCH IN MOLECULAR BEAMS: Collection of Papers Dedicated to Otto Stern on the Occasion of his Seventieth Birthday—Immanuel Estermann, Ed.—Academic, 190 p., illus., \$6.50. Scientific papers dealing with present and past research in the field.

RESEARCH AND DEVELOPMENT IN REACTOR SAFETY: A Program of the United States Atomic Energy Commission—B. John Garrick, Ed.—Goet. Print. Off., 66 p., illus., paper, 65¢. Review of the present status of AEC research and development directed toward nuclear reactor safety.

A SHORT COURSE IN ORGANIC CHEMISTRY—Harold Hart and Robert D. Schuetz—Houghton, 2nd ed., 346 p., illus., \$6. Written for students in agriculture, medicine and other groups requiring less than the traditional year's course.

SYMPOSIA ON CHILD AND JUVENILE DELINQUENCY presented at the American Orthopsychiatric Association—Benjamin Karpman, Chmn. and Ed.—Psychodynamics Monograph Series, 364 p., index, illus. by Wesley R. Wilken, \$10. Reports with analyses and comment by thirty leading child psychiatrists, psychologists and social workers.

WONDERFUL WHEELS—Feenik Zinet—Melmont Pubs., 24 p., illus. by Gene Holtan, \$2.50. Introduces young readers to the simplest mechanics of wheels.

Science News Letter, August 22, 1959

CONSERVATION

Aim at Wilderness Vote in Senate Soon

WILDERNESS for America may become a reality after more than two years of hearings.

A "mark up" session was held on Aug. 14 by the Senate Committee on Interior and Insular Affairs. The committee members considered all amendments, some 35 of them, to S. 1123, the Wilderness Bill, and drafted a "final" version of the bill. Supporters of the bill hope to have it reported out for consideration on the Senate floor before this session of Congress ends.

Opponents of the bill, largely those groups who use public lands, seem to have been defeated in their delaying tactics. For two years now they have said, in effect, that land now considered as "wild" should not be preserved as such for future generations. Commercial interests, they maintained, should have an option on these public lands.

During the hearings, two long sessions in Washington and six in various western states, a number of changes have been made in the bill to meet criticisms, yet keep the concept of preserving the nation's remaining wilderness areas.

Among the amendments that the committee considered are the following: 1. eliminate the Wilderness Preservation Council; 2. omit all references to Indian lands; 3. delete language some persons have interpreted as sanctioning unlimited expansion of wilderness areas; and, 4. prohibit admission of areas as part of the Wilderness System unless reviewed by the Congress.

Science News Letter, August 22, 1959

MEDICINE

Ills High in Suburb

A RAPIDLY growing suburban community is a good breeding ground for ulcers and other tension disorders.

An investigation of three communities, a stable rural area, a moderate-growth, mixed-rural region, and a rapidly expanding suburb, reveals that the mushrooming suburb housed the highest percentage of patients with coronary thrombosis, duodenal ulcer, and high blood pressure and related diseases.

Young women in the expanding suburb were particularly prone to these illnesses which a psychiatrist describes as psychosomatic—originating "in your head."

Young boys ran a close second in this respect, Dr. Richard E. and Katherine K. Gordon, Englewood, N. J., report in the *Journal of the American Medical Association* (Aug. 8).

It is difficult to show why married women and sons, whose rates are rising, were more unstable than the men, when much of the relocating is related to the husbands' new job opportunities, they pointed out.

In present day America, many married

women who move away from parents and familiar neighborhoods are soon exposed to responsibilities for which they are poorly prepared, and for which they receive little assistance, guidance, relief, and relatively less recognition and praise. These women are shy and insecure, the researchers explained.

Turning to the men of such a suburban community, Dr. Gordon explained that many of them are striving to rise socially and economically "out of the working class into subexecutive white-collar jobs and lesser managerial positions."

But they face a serious problem in their rise toward greater executive responsibility because they were not "born to the class" as were many of the men who are top executives. Thus, the upwardly mobile person has to learn everything the hard way and may have a great deal to lose and knows it. Psychosomatic illness and emotional disorders will disappear in the upwardly mobile person only when he feels he is secure and is able to relax, he concludes.

Science News Letter, August 22, 1959



TO SCALE
This is a
3-dimensional Model
16 inches high

The
**VISIBLE
MAN**
ONLY
\$4.95

Plus 35¢ Postage

Canada, 75¢

Other \$1.50

(Pa. only—19¢ Sales
Tax)

- Comparable medical model—\$350.00!
- From skin to bones!
- Articulated skeleton—206 bones!
- Parts-within-parts system!
- Heart . . . Lungs . . . Kidneys . . . Optic Nerves . . . Bronchial Branches, etc.
- Demountable!
- Twelve-page handbook—"An Introduction to Anatomy."

You can perform "operations"; explore at will; see through the transparent skin; remove the chest cavity.

For students, doctors, biologists, nurses, lawyers, teachers, psychologists, hospitals, laboratories, homes, libraries, offices, drug stores, advertising displays, home education, convalescent therapy, operation orientation, and hundreds of other uses.

Make your studies live with this remarkable VISIBLE MAN. A very rewarding and creative experience. Please send full name and address. Cash, check, m.o. \$4.95 plus 35 cents postage to:



Students, Parents, Educators,
Psychologists Like CHICK-NIK

See the ENTIRE HATCHING PROCESS

through the clear plastic windows of this exciting one-egg incubator. A thrilling lesson in natural history for children, an absorbing experience for adults. Offers a simple example of the complicated process of birth in an easy-to-understand manner. Interesting! Educational! Scientific! Useful! Free "Egg Hatching" Guidebook" with each order. (U.S. approved. Plugs into any wall socket. Complete, only \$3.95 plus 25 cents postage and handling. Cash, check, money order.

MAP OF EVOLUTION

MANKIND! ANIMALS! PLANTS! The only map of its kind in the world. Three maps in one! In color. Special map stock. Full wall size. A true mural map. Ideal classroom visual aid. Quick, easy, informative reference. A unique home, shop, office, school decorative attraction. Ten thousand million years . . . from flaming planet to modern man. Map of Evolution \$1.95; any two maps \$3.69.



MAP OF HISTORY

The rise and fall of peoples and nations for four thousand years! All on a mural size, color map. A panoramic view of history scaled to a map unique in the cartographer's art. Ideal as a teaching aid, educational and decorative. History Map \$1.95; any two maps \$3.69.

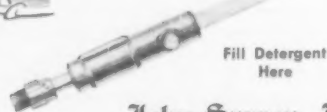
DICK KENT, Trader

P. O. Box 264, Camp Hill, Penna.

"World Wide Scientific, Educational Specialties"

ROTARY CAR WASH

Water from the hose sets the brush head spinning. Lets the Brush do the scrubbing instead of you. Hydraulic sudser changes the water for you . . . from suds to clear, when you flick the control switch. And . . . there's a plastic grip on the 3 foot aluminum handle to prevent slipping.



Fill Detergent Here



\$4.95

Postpaid
Use Rotary brush for clean-up jobs around the house

John Surrey, Ltd.

11 West 32nd St., Dept. SN-31, N. Y. 1.

MAGNETISM SET, only 35c

Get all this material • 2 1/2 x 1 1/2-inch horse-shoe magnet • Soft iron "keeper" • Also iron filings • Plus a 1/2" diameter directional magnetic compass • And a strip of purest nickel. Great fun with magnetism! Dozens of scientific experiments possible—ALL for only 35c.

HARRY ROSS Scientific & Lab Apparatus
63 Rende St., N. Y. 7, N. Y.

TELLS HOW TO SELL YOUR INVENTION

If you have an invention that you believe has merit, write us at once for copy of copyrighted booklet "How to Go About Selling Your Invention." We work with manufacturers, and booklet reveals present markets, qualities of a saleable invention, current royalty rates being paid by manufacturers. Booklet is FREE, is offered to encourage new ideas we might submit to manufacturers. Just send name (no drawings please) to

Kessler Sales Corp., Dept. D-418, Fremont, Ohio

Get UNITRON's FREE

Observer's Guide and Catalog on

ASTRONOMICAL TELESCOPES

This valuable 38-page book is yours for the asking!

With artificial satellites already launched and space travel almost a reality, astronomy has become today's fastest growing hobby. Exploring the skies with a telescope is a relaxing diversion for father and son alike. UNITRON's handbook contains full-page illustrated articles on astronomy, observing, telescopes and accessories. It is of interest to both beginners and advanced amateurs.

Contents include—

- Observing the sun, moon, planets and wonders of the sky
- Constellation map
- Hints for observers
- Glossary of telescope terms
- How to choose a telescope
- Amateur clubs and research programs



UNITRON

INSTRUMENT DIVISION of UNITED SCIENTIFIC CO.
204-206 MILK STREET • BOSTON 9, MASS.

Please rush to me, free of charge, UNITRON'S new Observer's Guide & Telescope Catalog ST-4.

Name
Street
City State

Best Book Contest for 1959

\$1600 Cash Awards plus 40% return. All types of manuscripts invited. For Contest rules and details of famous publishing plan, write for free Brochure SN. Pageant Press, 101 Fifth Ave., N. Y. 3

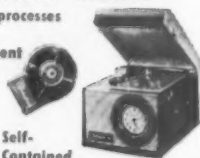
New "Mechanical Educator" to IMPROVE MEMORY

Learn faster than ever with new device effective for learning languages, speech, tables, facts, formulae.

DORMIPHONE MEMORY TRAINER

- Speeds up learning processes
- Aids concentration
- Provides entertainment

The Memory Trainer records, instantly plays back, and when clock is set, automatically repeats speech, music, any material at regular intervals through a built-in speaker. No reels of tape to snarl or rewind. Portable. Ideal aid for work, school, child training, entertainment—Used by educators, psychologists, people of all ages.



Self-

Contained

Recording Cartridges

from 30 seconds

to 55 minutes

Easily removed. Can be stored

or "erased" instantly and re-

used repeatedly.

Write TODAY for FREE

folder with complete infor-

mation.

Modernophone, Inc., 125-089 RadioCity, N.Y., 20, N.Y.

MICRO-ADS

Equipment, supplies and services of special interest to scientists, science teachers and students, science-minded laymen and hobbyists. 25¢ per word, payable in advance. Closing date 3 weeks prior to publication (Saturday).

SNL, 1719 N St., N.W., Washington 6, D. C.

BIOLOGICAL STAINS

BIOLOGICAL STAINS FREE PRICE LIST ESBE Laboratory Supplies, 450 Bloor St., W., Toronto, Ontario, Canada.

MINIATURE STEAM TURBINE

MINIATURE STEAM TURBINE. ACCURATELY machines. Efficient (2,500 rpm). Runs on heat from bunsen burner or solar reflector. \$2.00 post paid. Negravco, Box 414, Redwood City, Calif.

PRECISION SLIDE RULES

AGENTS WANTED TO SELL QUALITY Precision slide rules to students or manufacturer. Big profits. Write: Hoffman Products, Box 662L, Passaic, New Jersey.

SEE THRU MAPS

"SEE THRU" STAR MAPS THAT GLOW IN dark for easy star identification. 12 Map Sets—\$4.95. Broder Maps, 1368 McAllister St., San Francisco 15, California.

PUBLIC HEALTH

Bombs Put Carbon-14 in Air Faster Than Nature

MAN'S NUCLEAR bombs have produced radioactive carbon-14 in the earth's atmosphere 15 times faster than nature during the past four years.

This radioactive carbon becomes a part of the human body about a year after it enters the atmosphere for persons living in the United States. Radiocarbon-14 has been indicted by Nobel Prize-winner Dr. Linus Pauling of California Institute of Technology and other scientists as considerably more dangerous to humans, genetically, than radioactive strontium-90.

Four scientists from Columbia University's Lamont Geological Observatory report on their survey of bomb-produced radiocarbon in two related articles in *Science* (Aug. 7).

Neutrons released during nuclear tests react with nitrogen to give "man-made" carbon-14 as part of the carbon dioxide in the atmosphere. Dr. Wallace S. Broecker and his associates measured the bomb-produced radiocarbon in the oceans and the human body as well as in the air.

They found that the carbon-14 concentration in the lower part of the atmosphere increased about five percent each year between March, 1955, and March, 1958. Mixing of air between the Northern and Southern Hemispheres is so rapid that it is complete within two years.

Only about 10% of the radiocarbon-14 produced up to March, 1958, had entered the oceans. When this radioactive material becomes completely and evenly distributed throughout the atmosphere and the oceans, the amount in the air will be between one-quarter and about one and a half percent higher than in the prebomb days. This added amount will then gradually decrease, half of it being eliminated in 5,600 years.

Dr. Arthur Schulert and Edwin A. Olson of Lamont Observatory, and Dr. Alan Walton, now at the National Physical Laboratory, Teddington, England, cooperated with Dr. Broecker in the survey.

Science News Letter, August 22, 1959

Questions

BIOLOGY—What would be one practical application of the plant serum reported by Yugoslav research? p. 117.

ENTOMOLOGY—Where is the autumn fly posing the most serious problem? p. 120.

PEDIATRICS—What are some of the symptoms of drug addiction in infants? p. 116.

PSYCHOLOGY—How can your skin be used to indicate emotional response? p. 115.

Photographs: Cover, Republic Aviation Corporation; p. 115, Radio Corporation of America; p. 117, Boeing Airplane Company; p. 118, Arthur D. Little, Inc.; p. 119, Convair Division-General Dynamics Corporation; p. 128, Vernon Pope.

NOW YOU CAN EASILY Perform 50 Fascinating Experiments With Computing and Reasoning Circuits

New, Improved BRAINIAC K-30 "Electric Brain" Construction Kit



- ★ Designed Exclusively for the Science Materials Center
- ★ Assembles Quickly and Easily without Soldering
- ★ New Easy-to-read Manual Details 50 Fascinating Projects for a Basic Introduction to Computing and Reasoning Circuits
- ★ No Previous Electrical Knowledge Required

An engineer must design a machine that automatically will make change for a dollar, half-dollar, quarter, or dime when a button is pressed by a cashier. What is the electrical circuit for such a machine?

This is only one of the dozens of intriguing problems in logic, reasoning, and mathematics you can set up and solve in a short time with the new BRAINIAC K-30 KIT.

Distributed exclusively by the Science Materials Center, BRAINIAC K-30 is an improved version of the famous Brainiac "electric brain" construction kit—especially adapted by its originator, Edmund C. Berkeley, author of *Giant Brains or Machines that Think*, and editor of *Computers and Automation* magazine.

EXCLUSIVE NEW STEP-BY-STEP MANUAL
An easy-to-read, illustrated, step-by-step manual is included with every BRAINIAC K-30—and this, for the first time, actually puts BRAINIAC's circuitry within the grasp of an alert twelve year old, and provides teen-agers and adults with many rewarding hours of problems and experiments.

BRAINIAC K-30 is easily assembled with nuts and bolts (no soldering required) and contains new, patented wipers and multiple switches, enabling you to turn on and off as many as twenty circuits at a time. Here, indeed, is a veritable open door to the basic principles of the sciences of computers and automation.

As assembly lines shift increasingly to automatic operation, as records are kept more and more by computer machinery, as airplanes can now be guided by automatic systems—a growing number of scientists, mathematicians and technicians are needed to design and operate new computing devices.

10-DAY FREE EXAMINATION

BRAINIAC K-30 provides a thorough introduction to these new, opportunity-rich fields. Examine it, free, for ten days. You must be delighted or return the kit and owe nothing. Otherwise, send only \$18.95, plus postage. Take advantage of this no-risk offer by returning coupon today.

Some of the interesting circuits you can construct with your BRAINIAC K-30 Kit

- **LOGIC**
5 basic circuits
Elementary reasoning machine
Farnsworth car pool
Bruce Campbell's will
Guessing Helen's age
- **BINARY NUMBER SYSTEM**
Simple adding machine
Expressing numbers 1-10 with 4 lights
- **SWITCHING CIRCUITS**
Automatic elevator
Timothy's mink traps
General alarm
Signalling systems
3-point switching control
- **PUZZLES**
Cider pouring problem
Magic square
Four and four
Cops and robbers
- **GAMES**
Fifteen
Black match
Tic-Tac-Toe
Nim
- **INFORMATION CIRCUITS**
Money changing machine
Squares from 1-16
Prime numbers from 1-100
- **ELECTRIC QUIZ CIRCUITS**
- **CODING CIRCUITS**
- **COMBINATION LOCK CIRCUITS**
- **AND MANY OTHERS**, totaling 50 experiments

FREE CATALOG



Hundreds of pre-tested science kits, instruments, toys, etc.—age-graded for young people from 4-16—are available through the Science Materials Center, a division of The Library of Science. Here is a central source of reliable, reasonably priced science materials for the teacher, scientist and parent. Check and return coupon to receive your Free catalog.

SCIENCE MATERIALS CENTER 59 Fourth Avenue New York 3, N. Y.

Science Materials Center, Dept. M-54
59 Fourth Avenue, New York 3, N. Y.

Please send me . . . BRAINIAC K-30 KIT(s) at \$18.95 each, plus postage, for a free ten-day examination. Within that time I'll either return them or send my check.

Name _____

Address _____

City _____ Zone _____ State _____

☐ Check here if you are enclosing full payment now, and we will pay postage. Same return privilege.

☐ Check here if you wish only to receive a Free copy of the Science Materials Center catalog.

New Machines and Gadgets

For sources of more information on new things described, send a self-addressed stamped envelope to SCIENCE NEWS LETTER, 1719 N St., N.W., Washington 6, D. C., and ask for Gadget Bulletin 1001. To receive this Gadget Bulletin without special request each week, remit \$1.50 for one year's subscription.

TRANSISTOR RADIO is built into the frame of sunglasses. Designed for use at the beach or ball game, the radio is controlled by dials at the ends of the glasses' stem. It has three transistors plus one germanium diode powered by a mercury battery. Built-in earphone permits private listening.

Science News Letter, August 22, 1959

SLIDE PROJECTOR will show slides on the screen while the operator previews the next tray of slides on an illuminated editing panel at the back of the projector. The projector has a "push-pull" slide changing mechanism and is constructed of die-cast aluminum.

Science News Letter, August 22, 1959

PAINT BRUSH GUIDE protects window panes and makes painting window frames a neater and easier job. The retractable guard, which covers one side of the brush, can also protect surrounding surfaces when walls, trim and baseboards are painted.

Science News Letter, August 22, 1959

BOAT FOR CHILDREN, shown in the photograph, is made of rigid polyethylene and can be used in pond, back-yard pool or bay. The craft is five feet long, only eight pounds in weight, easy to operate, and re-



portedly unsinkable. A plastic sail can be added to convert it from a rowboat to a sailboat.

Science News Letter, August 22, 1959

WALKIE-TALKIE has a self-contained power supply and operates from an automobile cigarette lighter or any outlet in the home. Two-way radio communication reportedly can be maintained up to a range

of 20 miles and is not affected by buildings or trees. The portable nine-pound units can be operated without an examination or complicated license procedure by any U. S. citizen at least 18 years old.

Science News Letter, August 22, 1959

ALUMINUM SHELTER with a 20-by-20-foot roof is easily movable and can be used as a carport, cabana, barbecue shelter, boat house or beach pavilion. The light and durable structure is supported by four aluminum posts. Any type of decorative finish can be used on the underside of the roof.

Science News Letter, August 22, 1959

EGG SLICER will cut a hard-boiled egg into six equal portions. The egg is placed in a plastic cutting bowl and fine steel cutting wires slice it when the aluminum handles are squeezed together.

Science News Letter, August 22, 1959

COIN HOLDER for toll road drivers clips to the visor of the car. It holds quarters, dimes, nickels, and pennies up to \$1.95, and has a place for pen or pencil. Two fingers can quickly insert or withdraw coins. With the visor folded back, the holder is out of sight.

Science News Letter, August 22, 1959



Nature Ramblings



By HORACE LOFTIN

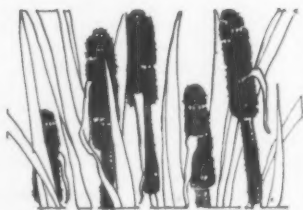
THE EVERGLADES is everything its romantic name implies: a solid stand of glades or grass extending ever in the distance. One Florida old-timer summed the 'Glades up as "miles and miles of miles and miles."

The true 'Glades stops, however, where the trees begin.

To the east are cypress and pine scrubs of the Atlantic coast. To the west, the Big Cypress swamp marks the border of the Everglades. To the south lie picturesque mangrove swamps, the area usually shown in movies and television as "the heart of the Everglades." Northward are the prairies leading into scrub country and, of course, huge Lake Okeechobee which is the natural source of water for the Everglades.

The 'Glades, then, is one vast marsh: an area covered for most or all of the year with water and having grass or grass-like plants as its dominant vegetation. On the other hand, a swamp is a watery area with trees as its dominant plant life. So the next time the movie hero is shown hacking a path for

Swamps and Marshes



his boat through a dense growth of trees, you will know he is in a swamp despite the ads about "Everglades adventures."

This raises an interesting point: according to this definition, the Everglades National Park covering thousands of acres of the southern tip of Florida is scarcely in the 'Glades at all!

The true Everglades extends from about the lower end of Okeechobee to about the Tamiami Trail, all mostly north of the park. While there are typical 'Glades re-

gions in the park, its most striking features are the great mangrove swamps and semi-tropical forests to be found there.

The shores that surround this marsh were probably the first on this continent known to white men, yet the inside of the Everglades was the last known. English mapmakers seem to have given the area its name—first River Glades, then as it appeared later, Ever Glades. The old Anglo-Saxon word "glæd", meaning shining or bright is an appropriate one for this open, green place. It is as good a name as the Indian: "Pahayokee" or Grassy Water.

The "Big Cypress" lying between the true Everglades and the Gulf coast likewise is often confused in the popular mind with the 'Glades.

As the name implies, this is a swamp with water-loving cypress the dominant tree. However, the "Big Cypress" is not a region of huge cypresses. In fact, the trees are in general rather scrubby affairs there. The "big" in Big Cypress comes from the vast extent of this great swamp.

Science News Letter, August 22, 1959

